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The OIL and GAS JOURNAL

PRODUCING REFINING ENGINEERING MARKETING

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Advertisers' Index on Page 29 Table of Contents on Page 30

Allegheny Metal

CONTROLS CORROSION

IS being used for Tubes in Cracking Stills, Heat Exchangers, Condensers and other equipment subject to hot gases, acids and other corrosive elements.

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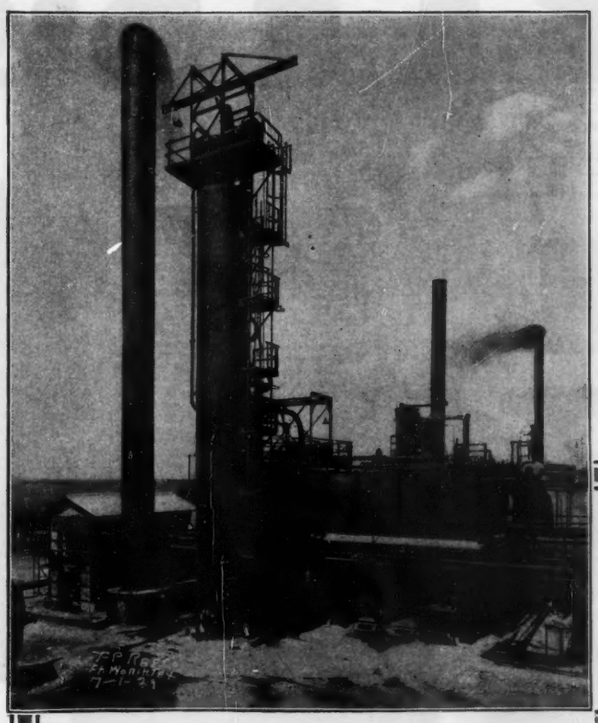

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VALVES
FITTINGS
AND TOOLS
for

OIL

UNIT OF TEXAS AND PACIFIC OIL AND REFINING CO., AT FORT WORTH, TEXAS

● Quality of product and source of supply are the two most important considerations in your valve buying. ● For quality of product look for the name of the manufacturer who is eternally studying the problem from the oil man's point of view and putting into valves the materials and design calculated to serve him best. ● For source of supply, choose the manufacturer who makes a complete line, who is represented in the field by distributors with stocks of valves and fittings designed to solve every problem of the oil country. ●

Walworth Sigma Steel Valves and Fittings are available in Series 150, 300, 400, 600, 900 and 1350. The complete Walworth Sigma Steel Catalog is yours for the asking.

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The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879.

SPENGLER'S
HEAT TREATED
ALLOY-STEEL
TOOL JOINT

EQUIPMENT used in deep drilling areas must meet rigid requirements. SPENGLER'S HEAT TREATED ALLOY-STEEL TOOL JOINT is the strongest made, standing all the gruelling punishment of deep drilling. It is noteworthy that this tool joint meets A.P.I. specifications as well as having unusually high tensile strength.

Our plant is the most modern and complete in the southwest. We assure immediate delivery and your inquiry is invited.

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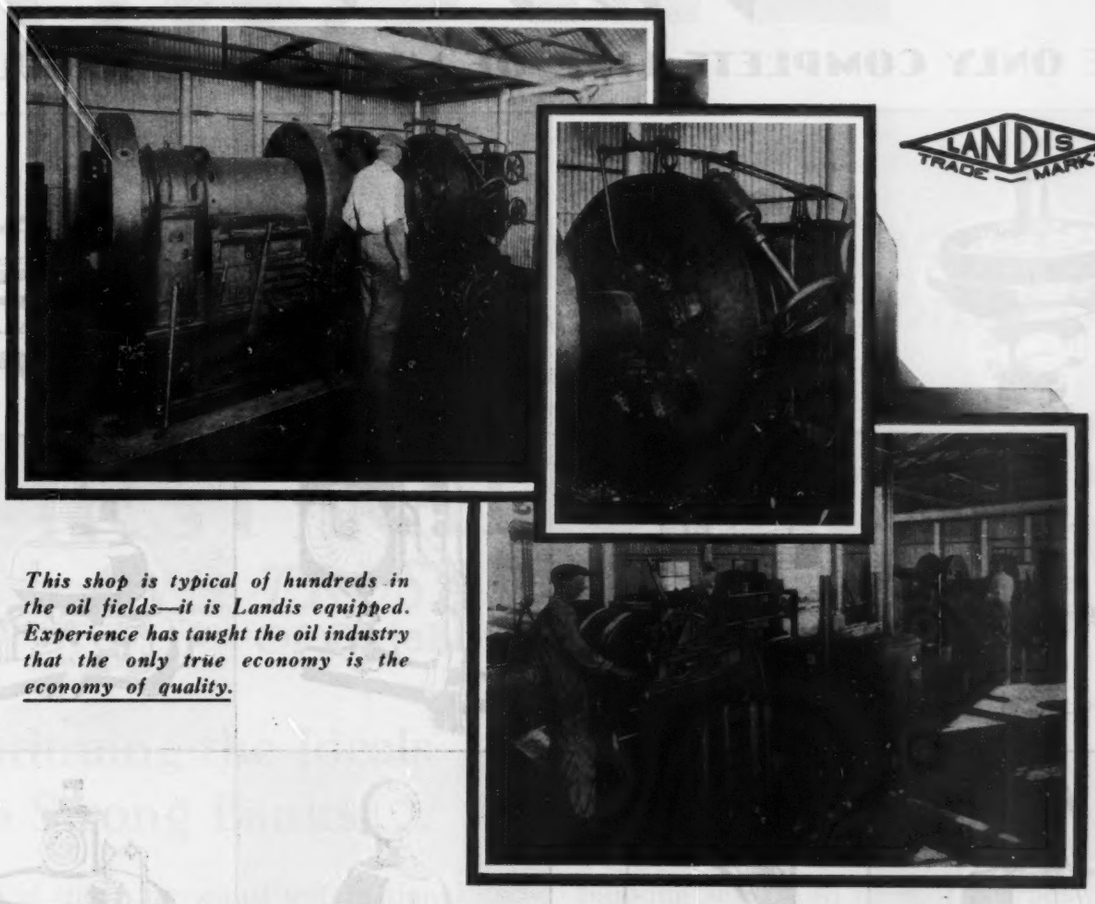
Quality Is True Economy



This shop is typical of hundreds in the oil fields—it is Landis equipped. Experience has taught the oil industry that the only true economy is the economy of quality.

There are few industries where greater importance must be attached to the quality of equipment used—and where that equipment operates under more difficult circumstances—than in the Oil Industry.

Take, as an example, Pipe Threading Machines. It is generally accepted that oil country tubular goods must have threads that are cleanly cut, properly formed and correctly tapered.

The Landis Pipe Threading and Cutting Machine—employing the distinctive Landis Chaser, with its free-cutting action, natural clearance and permanent accuracy—produces threads that will pass the most rigid inspection.

In addition, a Landis is sturdy enough to withstand twenty-four-hour service, day in and day out, and yet it is flexible and speedy enough to out-produce any ordinary machine.

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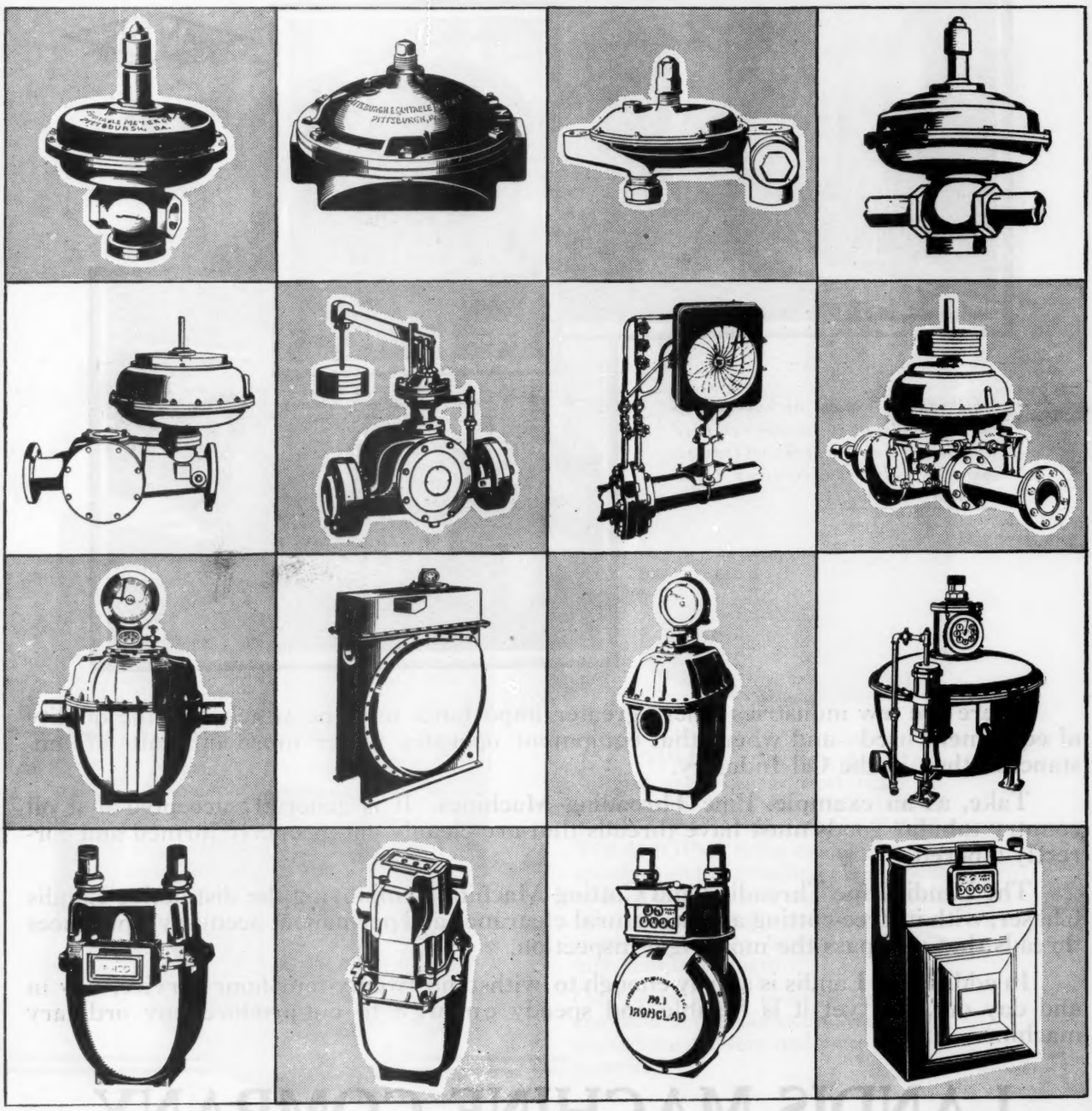

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The American-First National Bank and the Security National Bank

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The FIRST NATIONAL BANK AND TRUST COMPANY Of Oklahoma City

1ST Since 1889

. . . continuing the Ideals of two Strong Banks . . .

The union of the American-First National and the Security National banks brings into being The First National Bank and Trust Company of Oklahoma City.

This is not a new bank but a continuation of the personnel, resources and ideals of two of the state's oldest and strongest financial institutions. The charter of the American-First National, which is continued in this merger, dates back to 1889, the year that Oklahoma City was founded. The Security National was established in 1906. Both banks have long typified safety and dependability.

The combined strength and diversified facilities resulting from the joining of these two institutions present the most complete and helpful banking service to present patrons and to new customers.

We have looked forward with eager enthusiasm to the opportunities and responsibilities that come with the establishment of The First National Bank and Trust Company. This institution is better equipped in men and resources than ever before to further the interests of Oklahoma, its citizens and its industries.

A bank so organized, so able to supply the needs of its patrons, surely has an opportunity in this wealth-producing territory to fulfill its promise to the men and women of Oklahoma.

To serve you better than ever before, to preserve the traditions of more than 40 years of successful banking in Oklahoma City, to merit the continued confidence and good will of this community—that is our ambition.

The FIRST NATIONAL BANK AND TRUST COMPANY Of Oklahoma City

1ST Since 1889

EMCO METERS AND REGULATORS

Start the New Year Right—Use Baker Cement Equipment

BAKER CEMENT FLOAT COLLAR

During the past year we have tried to tell you the merits of Baker Cement Equipment for Floating, Guiding, and Cementing, and the benefits to be derived from its use.

Perhaps you are one of the hundreds of new users who have demonstrated to their own satisfaction that Baker Cement Equipment is superior in every way to cast-iron equipment. If not, consider this brief summary of facts:

Baker Cement Equipment has supplanted cast-iron equipment for Floating, Guiding, and Cementing operations. In it, all of the cast-iron valves, plugs, and guides have been replaced by Baker-Formula Concrete and Baker Celoron Ball Check Valves and Valve Seats.

BAKER CEMENT FLOAT SHOE

Baker-Formula Concrete has a compressive strength of 6002 pounds to the square inch. The especially-designed Baker Celoron Ball Check Valve has an even greater strength. These great strengths are ample to more than take care of any pressures found in the deepest wells.

Baker-Formula Concrete and Baker Celoron, while amazingly strong, disintegrate readily under the bit and may be easily circulated away, leaving a clean hole for any subsequent operations which may be found necessary.

BAKER CEMENT FLOAT COLLAR, shown at the left, is a Baker-Formula Concrete plug, cast and anchored in rounded grooves in a special seamless steel coupling, 20 inches in length. The plug contains the Baker-designed Celoron Ball Check Valve.

BAKER-BURCH CEMENT FLOAT SHOE, shown at the right, is a Plain Casing Shoe containing a Baker-Formula Concrete guide-shaped plug which is cast and anchored in rounded grooves. The plug contains the Celoron Ball Check Valve.

You can increase the efficiency, as well as the economy of your operations during 1930 by starting the New Year right—Use Baker Cement Equipment—Prove It—STANDARDIZE ON IT.

Detailed Information Will Be Mailed on Request

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Stocks carried by Dealers in all active Mid-Continent fields.

The Vacuum Still Control Board

Control Board for De-Waxing Plant

One of the Newest and Most Interesting Modern Developments in Paraffin-Base Oil Refining

ONE of the new developments commanding the greatest interest at this time among refiners of paraffin-base crudes is the Govers Process of vacuum distillation and solvent de-waxing developed and now in operation at the Lawrenceville, Illinois, plant of the Indian Refining Company

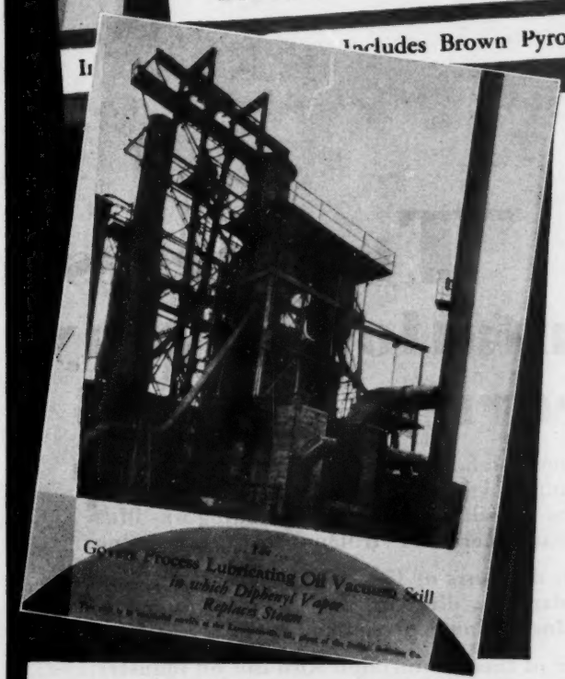
One of the first units for the practical operation of this process is shown in the front of this folder

One of the attention-arresting features of this process is the novel idea of substituting diphenyl vapor instead of steam in the stills in the oil distillation units.

The use of diphenyl permits a highly accurate application of heat with unusually low pressure

Liquefied diphenyl is introduced into a circulating boiler where it is vaporized to serve as a heating agent for the vacuum distillation of the oil charging stock. As the diphenyl vapor passes through the vacuum still, it gives up its heat, condenses and is returned to the diphenyl circulating boiler for reheating. Operating in a closed system, the diphenyl lost over a six-month period of operation is negligible. This is the first time diphenyl has been employed as a heat transfer agent in petroleum refining. In the designing of the installation at the Indian Refining Company's plant, careful planning has provided for observing and checking vital operating factors at every stage of the process. For this purpose Brown Instrument Company engineers were called in to suggest and provide complete instrument equipment to meet many of the problems involved. For standard practice or pioneering Brown Instrument Service is organized to handle any engineering or factory requirement of the petroleum refiner.

Includes Brown Pyrometers, Thermometers, Resistance Thermometers, CO_2 Meters, Flow Meters



Ask us for a copy of this bulletin—No. 26-29.

STEAMLESS
"Steam Stilling"

Steamless "steam stilling" is the latest wrinkle in lubricating oil refining.

The Indian Refining Company is showing the world how to do it with Diphenyl via the Govers Process.

Here again Brown instruments and Brown instrument engineering were called in on a new job.

Operating factors had to be observed—determined—controlled. Brown equipment and special knowledge supplied the means.

The bulletin here illustrated tells about this novel unit—shows pictures of the still and controls.

Write for a copy of this bulletin—No. 26-29. Inquiries concerning instrument problems for your work, planned or present, will be handled promptly by men who specialize in serving the refiner.

THE BROWN INSTRUMENT COMPANY
4488 Wayne Ave., Philadelphia, Pa.

Branches in 20 principal cities.

Brown Instruments

To Measure is to Economize

Institute Over, Oil Men Are on Way Home Again

Next Year's Convention to Be in Chicago November 10-13

(Special to The Tribune)

CHICAGO, Dec. 6.—After selecting Chicago as the 1930 convention city at the final session here Thursday night, delegates to the tenth annual American Petroleum institute meeting here were on their way back home this morning.

The President's Special, carrying the Tulsa delegation, departed this morning and is due to arrive at the oil capital at 7:15 Saturday night.

The new executive committee, which governs the affairs of the institute, held its first meeting at noon Thursday. The committee is composed of E. W. C[illegible], Los Angeles; J. Howard Pe[illegible] York; W. C. Holmes, Ne[illegible], Pittsburgh, and R. C. Teagle, Ne[illegible] Leo[illegible], Independence, York; A. [illegible]

W. S. F[illegible] address of the annual banq[illegible] Thursday was delivered by [illegible] spoke on "Prop[illegible] fits."

The Exchange National bank of Tulsa had the largest representation of directors of any one concern at the meeting. Exchange directors who attended the meeting here were: Harry H. Rogers, president; John H. Markham, jr., J. J. Larkin, Dana H. Kelsey, H. V. Foster, C. H. Sweet, C. A. Steele, E. H. Hanlon, E. B. Reeser, W. C. Bryant, T. A. J. Moran, F. W. Creekmore, Harry F. Sinclair and Earl W. Sinclair.

Next year the convention will again be held in Chicago, on November 10-13.

From The Tulsa Tribune, issue of Friday, December 6, 1929

"The Largest Representation of Any One Concern . . . ."

A thorough understanding of oil industry conditions has been the constant background of Exchange National Bank progress; and the breadth of that understanding was illustrated at the recent American Petroleum Institute meeting.

Attendance by directors of The Exchange National Bank exceeded attendance by directors for any oil company or other affiliated institution represented.

The character of their connection with the oil industry, requiring the presence of these directors at the industry's most important conferences, is substantial indication of the dominant position occupied by The Exchange National Bank.

Combined Capital, Surplus and Undivided Profits Exceed $10,000,000
Resources Exceed $100,000,000

EXCHANGE BANKS OF TULSA

The Exchange National Bank — Exchange Trust Company

The big red Halliburton trucks that you see in the field do their work amazingly well; but they are merely the visible symbols of the intense research and scientific study that goes on constantly in the Halliburton laboratories ... To meet Halliburton standards the strongest commercial trucks are rebuilt to make them *stronger;* the most dependable pumps are strengthened to make them *more dependable;* valves, fittings, plugs and mixing device are all specially designed to give your well the maximum protection to which its liquid treasure entitles it.

Interesting facts on Cementing Problems and sidelights on petroleum matters in general are contained each month in THE CEMENTER. Would you like to receive a copy regularly? No cost or obligation; simply send in the coupon.

Halliburton Oil Well Cementing Co.
Dept. OG, Duncan, Okla.

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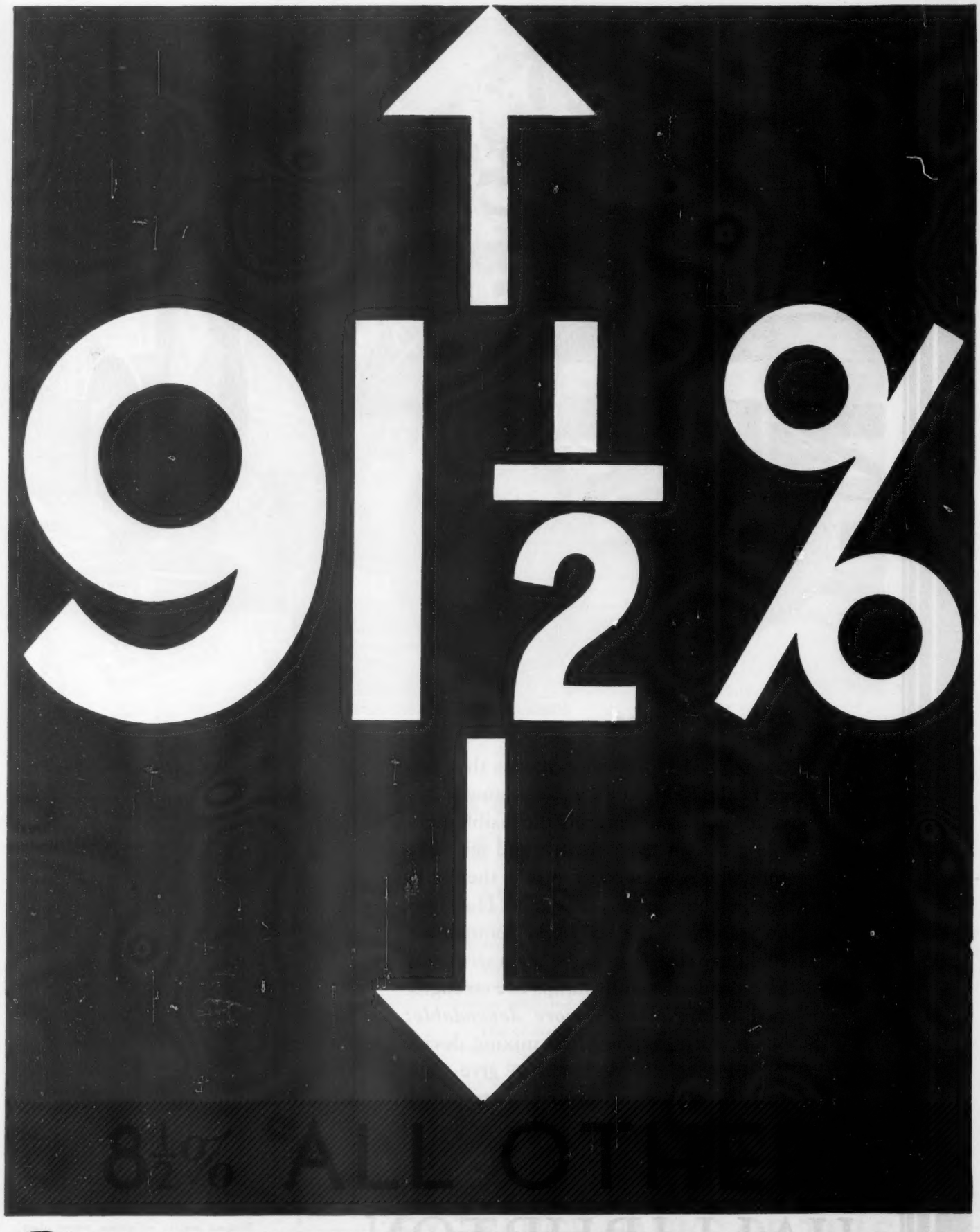
91½%
SMITHWELDED

91½% of the increased cracking capacity March 1, 1928, to March 1, 1929, was represented by cracking units made up of SMITH Welded Vessels.

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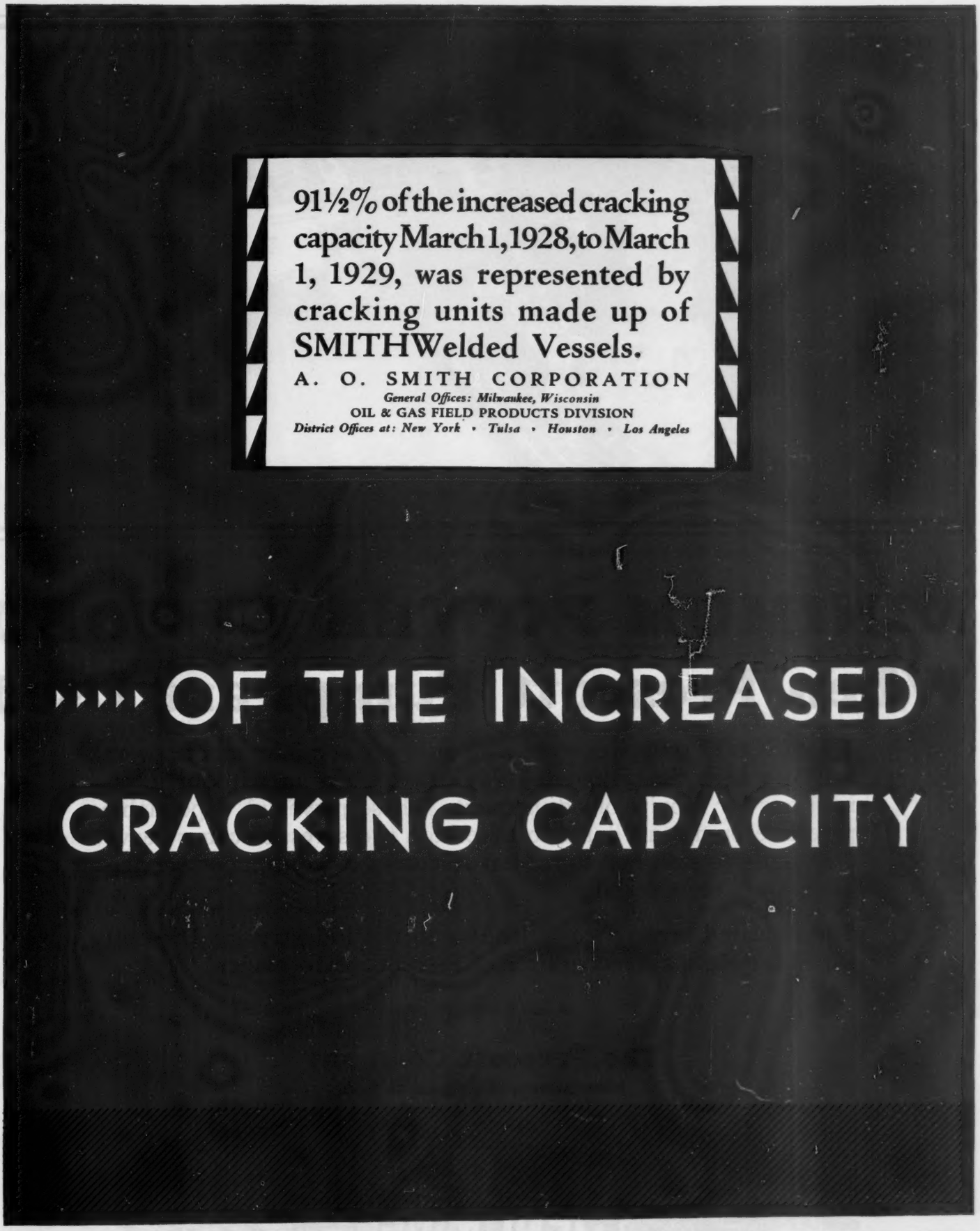
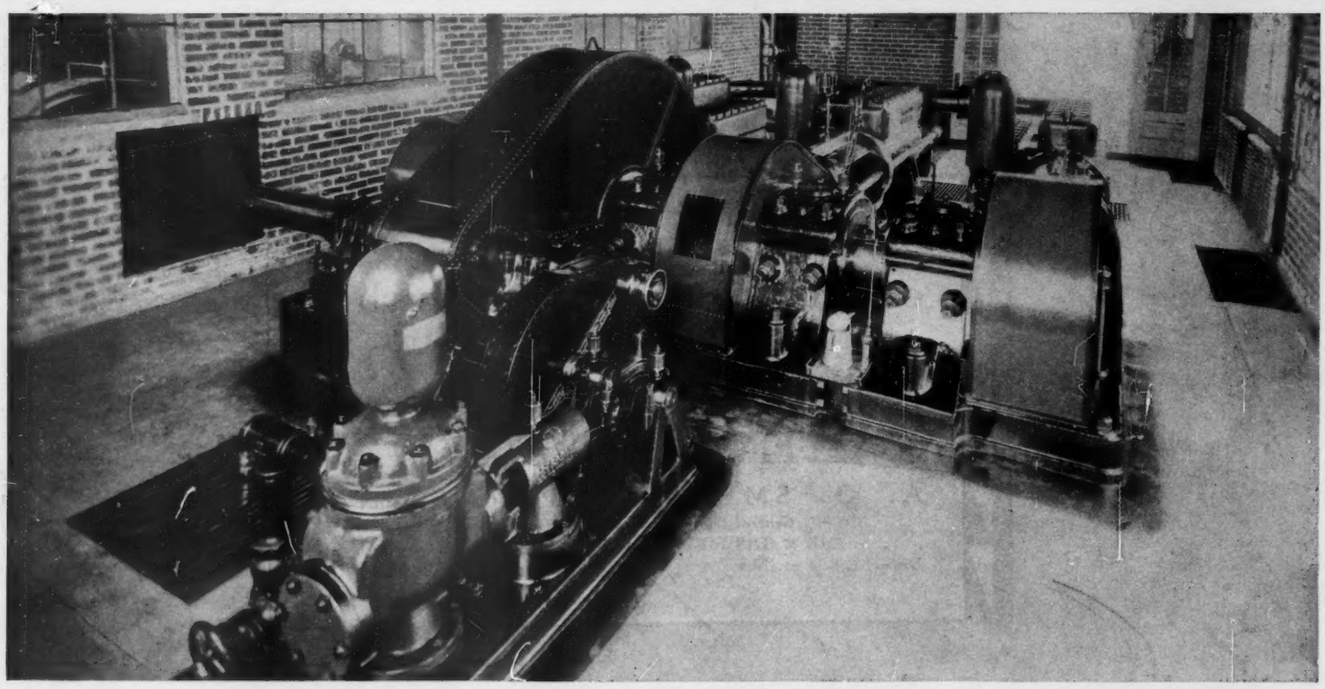


CRACKING STILLS



A 25,000-barrel Prescott Pipe Line Pump at the Ralston, Oklahoma, station of the Oklahoma Pipe Line Company.

MINIMUM POWER NEEDED When Prescott Pumps are Used

PRESCOTT pumps operate with an unusual minimum of power. They keep the oil moving day-in and day-out without interruptions for repairs or adjustments. These powerful, dependable pipe line pumps are built to take high pressures, to carry heavy overloads, to stand up to the hardest kind of continuous service. They do it economically.

The repeated preference of leaders in the industry for Prescott Pipe Line Pumps is recognition of Prescott performance.

A bulletin on request.

The Prescott Company
Menominee, Michigan, U. S. A.

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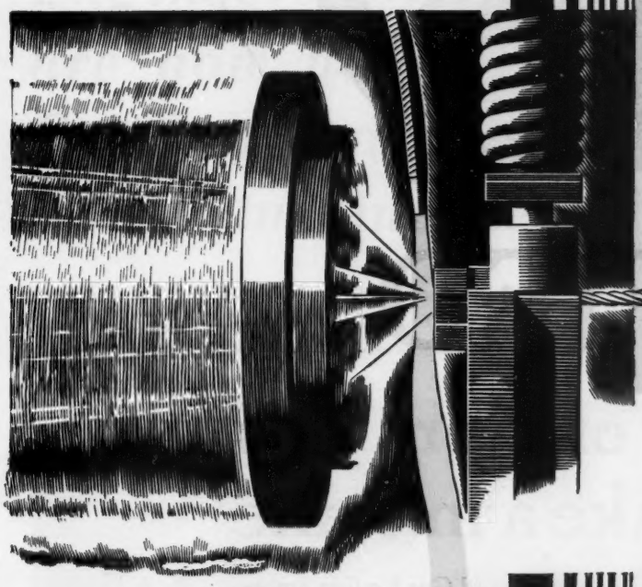
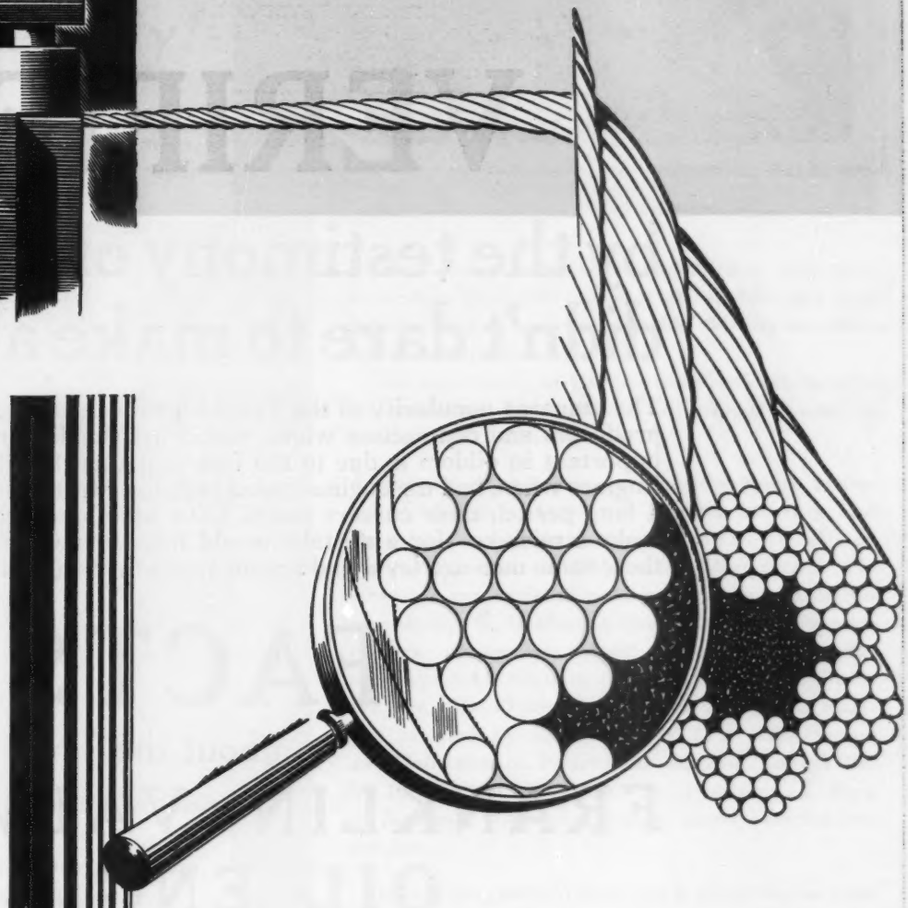
OGJ 1-2 Gray

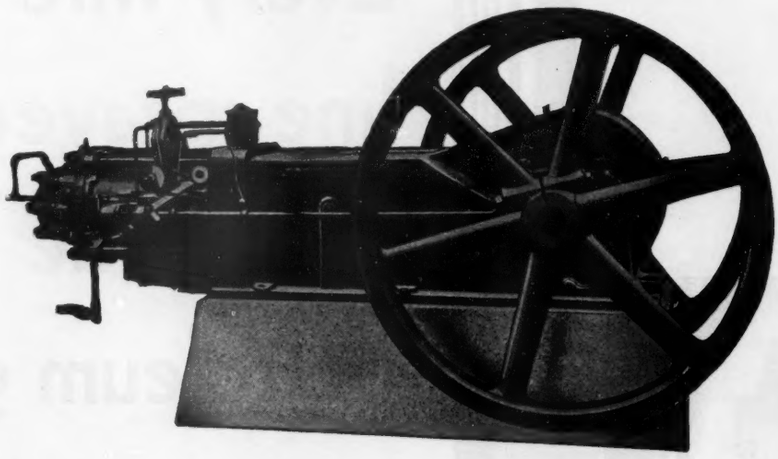
Every wire in the line sprayed with high grade petroleum grease





INTERNALLY LUBRICATED! The grease applied hot to the individual wires of the line during fabrication. Spun right into the strand where it remains to lubricate the wires and protect them against internal friction. Means longer life for the line—greater economy for the user. Macwhyte Company, Kenosha, Wisconsin.

MACWHYTE Wire Lines



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by the testimony of users who didn't dare to make a mistake

The amazing popularity of the Franklin Valveless Oil and Gas Engine among producers and contractors whose names are steadily growing more and more important in oildom is due to the fact that they bought Franklin Valveless Engines when, had the engines failed to deliver trouble-free performance over a long period, their careers would have been wrecked—they didn't dare to make a mistake—for a mistake would have meant financial ruin. So today these same men are loyal and ardent Franklin Engine fans.

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about the

FRANKLIN VALVELESS OIL ENGINE

Distributed by the Oil Well Supply Company—40—50—80 H.P. in a price range of $1500, $2000 and $3150. Complete simplicity and strength without burdensome weight. Positive lubrication—diesel economy of fuel—removable and reversible bearings—standard threads throughout. No Special Wrenches required. Ideal for cable tool drilling under any condition. Install side by side with any competitive type prime mover and contrast performance and fuel costs—the O.F. will win.

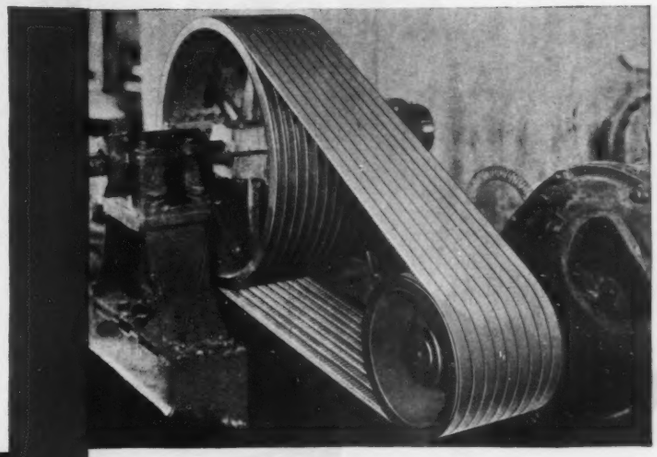
Franklin Valveless Engine Company

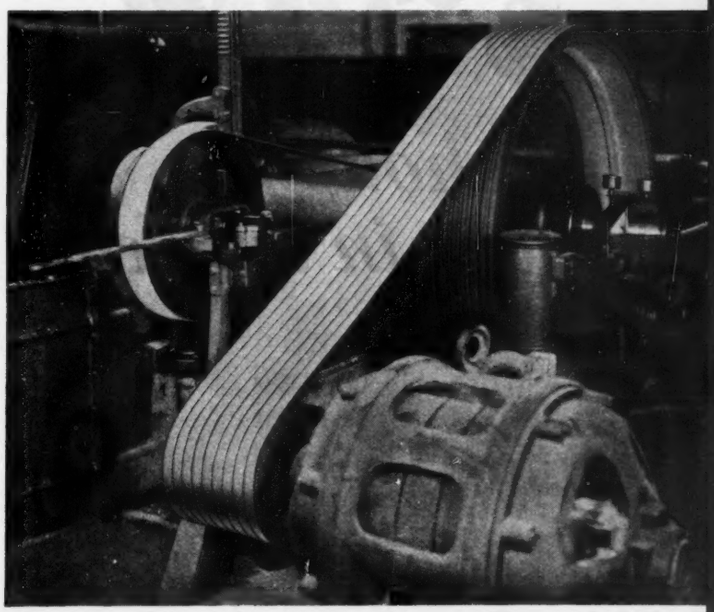
Franklin, Pennsylvania

Uninterrupted Production

Engineers everywhere are now using Dayton Cog-Belt Drives to keep wheels turning steadily!

Almost overnight this revolutionary new drive has won nation-wide recognition in every line of industry. Production Engineers, everywhere, are using the Dayton Cog-Belt Drive to *lick* their hardest power transmission problems. For they find that this drive does the job cheaper and better—that it keeps production flowing on without interruption.





The superiority of the Dayton Cog-Belt Drive is due to these outstanding advantages found in drives of no other type.

1 ***Positive Speed*—greater gripping power maintains exact speed ratio.** **2** ***Smooth Starting and Running . . .*** **through seating action of belts in pulley grooves.** **3** ***Vibration Eliminated.*** **No vibration transmitted between driving and driven machines.** **4** ***Minimum Space Required.*** **Smaller pulleys. Extremely short center-to-center distances possible without idlers.** **5** ***Rugged—Quiet—Clean.*** **No oil or grease to leak and collect dust. Not affected by moisture.** **6** ***Less Adjustment and Maintenance.*** **Fewer belts required. Longer life. No lubrication necessary. No dressing.** **7** ***Easy on Bearings.*** **Greater gripping power permits less tension.**

But see for yourself that this is the drive for your machines—send for a sample section of the Dayton Cog-Belt and Dayton's new Cog-Belt Catalog. Mail the coupon today.

THE DAYTON RUBBER MFG. COMPANY, Dayton, Ohio

Manufacturers of Dayton De Luxe Thorobred Balloon Tires and Dayton Fan Belts

Dayton

COG-BELT DRIVES

THE DAYTON RUBBER MFG. CO.,
Dept. No. R-10 Dayton, Ohio.

***Gentlemen:*—Send me a free sample section of the Dayton Cog-Belt and a Dayton Cog-Belt Catalog. I am interested in Dayton Cog-Belt Drives for**

☐ Use in plants ☐ Use on products

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Position.....

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When you are purchasing valves, if you could see what inside workings of the valve will look like after good hard use, it would be no problem at all to pick the right valve. And the Darling Valve is the valve you would pick, even though it does cost more. It has the stamina to continue in giving first class service long after valves that cost a little less have been discarded.

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Bronze Double Disc Gate Valve

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Years of experience, and countless tests in actual service have developed in Lunkenheimer engineers a flair for producing designs that not only give the maximum in length of service but give dependable performance under gruelling conditions.

This lasting service is the main reason why the names of so many of industry's leaders are found on the Lunkenheimer books.

It is to your advantage to specify Lunkenheimer Valves.

Literature upon request

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We can supply all your Pole requirements from our complete stocks of cedar poles.

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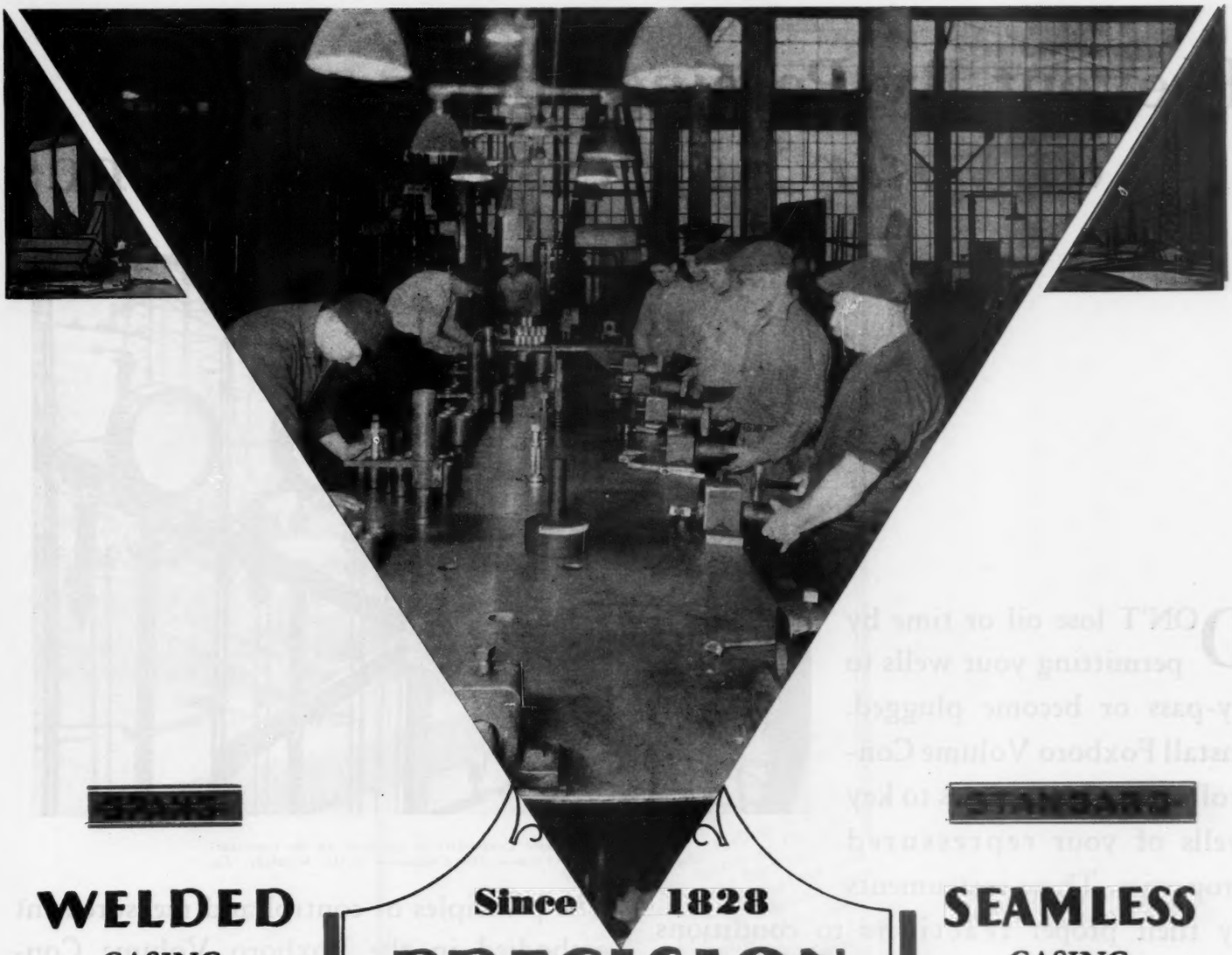

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LARGE O. D. PIPE
LINE PIPE
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DRILL PIPE

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Since 1828

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You can benefit by their precision methods of manufacture by specifying "Spang" Welded Steel Pipe or "Standard" Seamless Pipe in your future order requisitions.

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DRILL PIPE
(Regular and Heat Treated)
LINE PIPE
STILL TUBES

Sizes 2 inch to 13 3/8 inch O. D.

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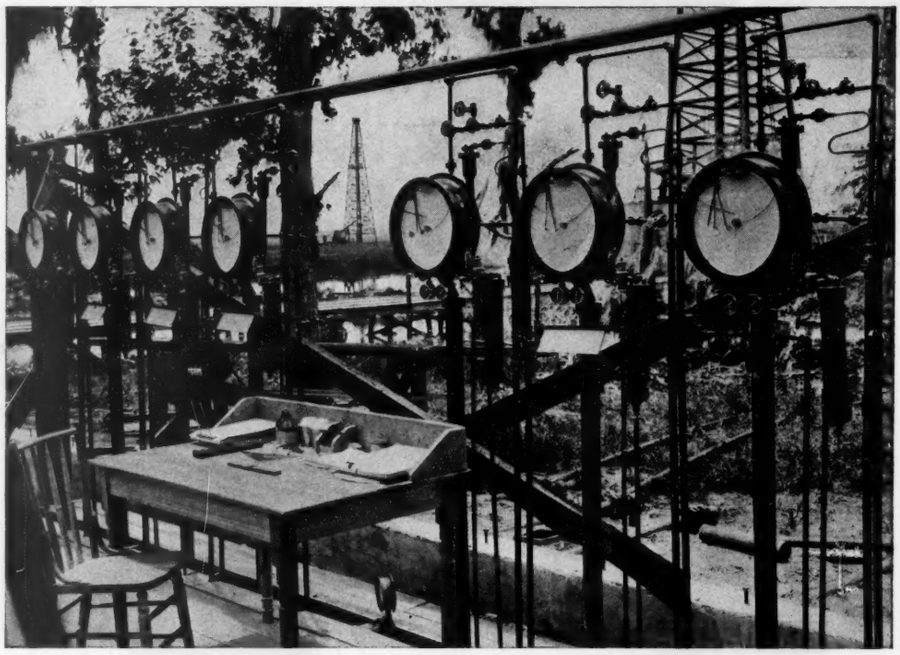
Prevent By-Passing and Jamming *of your* Repressured Oil Sands



Foxboro Volume Controllers in operation on the repressuring of the Vacuum Oil Company's wells, Westlake, La.

DON'T lose oil or time by permitting your wells to by-pass or become plugged. Install Foxboro Volume Controllers on the gas lines to key wells of your repressured properties. These instruments by their proper reactions to conditions maintain uniform distribution of gas values through the oil sand. They prevent the tendency to by-pass. They help you to speed up the repressuring of oil sands with perfect safety and give invaluable records for analyzing the sand reactions.

More than 800 of these Foxboro Volume Controllers are giving satisfactory service.

The principles of control and measurement embodied in the Foxboro Volume Controller have been proved by time and tested by the hardest kind of field service. Each Controller is sealed with the Foxboro Guarantee.

Write to a Foxboro Engineer at the nearest Branch Office to-day. He will tackle any problem in flow or volume control that you may put up to him.

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Three thousand years before the birth of Christ the people in the ancient country of Babylonia kept a New Year festival which they called "Zalmuk." Since then no holiday has been so widely celebrated in the different countries of the earth among all peoples and in all ages.

On this turning point of time marking the passage of an old year and the coming of the new, we see things for a moment against the background of accomplishment. The New Year gives promise of the greatest progress ever recorded in the oil industry. Hope is high in every man's heart whether on derrick floor or in executive office.

We express our feeling of gratitude for the favors of the past busy year—for the faith and confidence of friends. That we may continue to merit this and more in 1930 is our renewed resolution.

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WHERE can a Roller Bearing find a greater test than in the drawworks? Where can the manufacturer give the drilling company or contractor greater returns from the use of the right Roller Bearing than in such particularly strenuous jobs as drawworks handle?

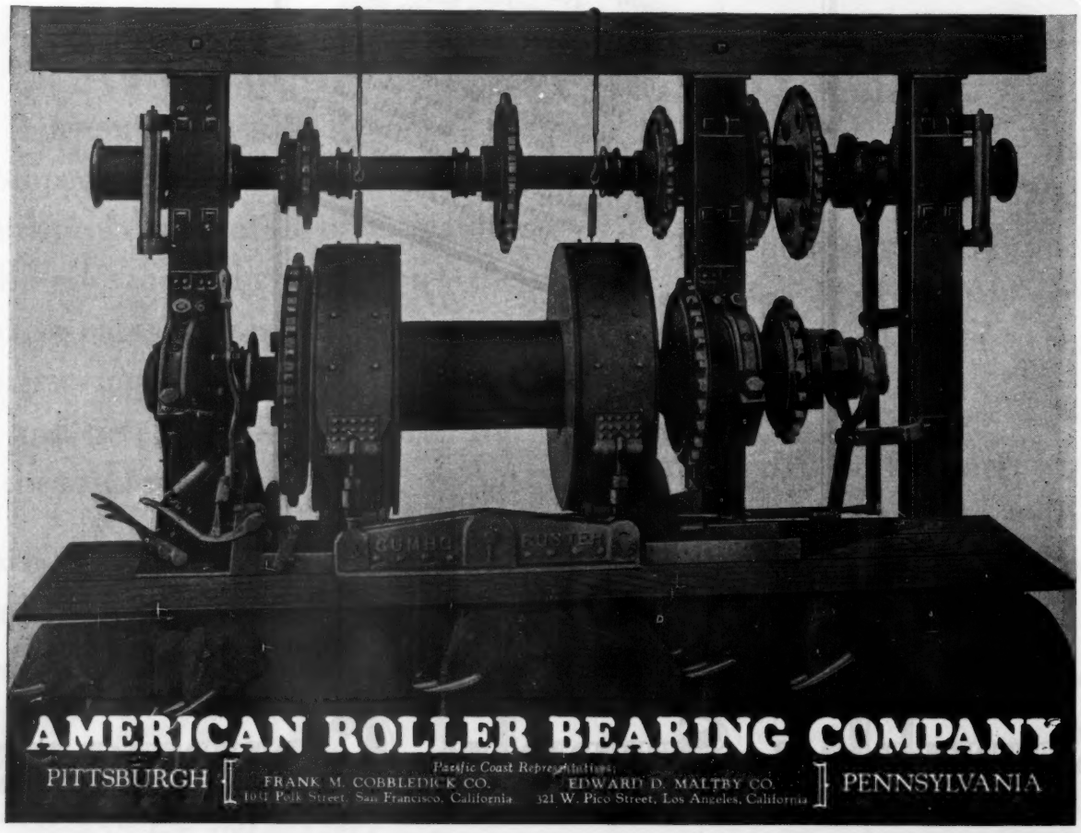
American Well and Prospecting Company went to headquarters for their Heavy Duty Bearings used in their new drawworks shown here. The Bearings in this installation will never have to be field-adjusted nor will they ever give any trouble, if they live up to all the records of American Bearings in drilling service.

AMERICAN ROLLER BEARINGS HEAVY DUTY

CONSIDERABLE thought is being given right now to bigger and better drawworks. This gives the manufacturer fine opportunity to build them better by basing the whole works on American Heavy Duty Bearings.

Finer bearing steel, longer life, or more reliable, free-from-trouble service is not to be obtained from any bearing than from the standardized oil country bearing called—

HEAVY DUTY AMERICAN



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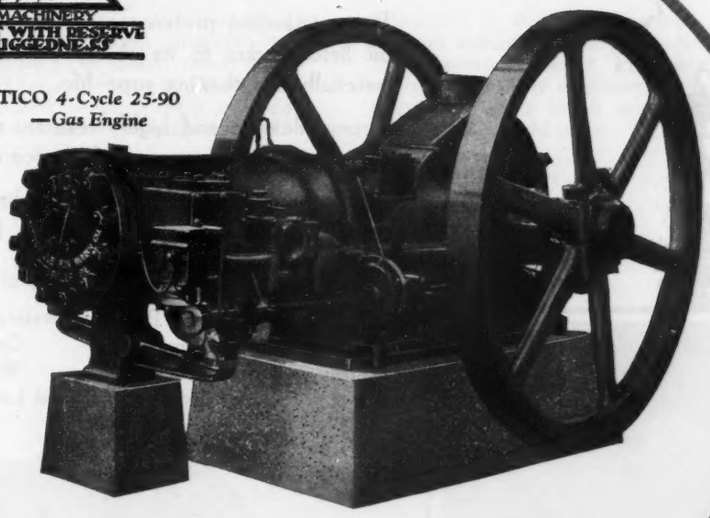
TITUSVILLE OIL COUNTRY MACHINERY BUILT WITH RESERVE RUGGEDNESS

TICO 4-Cycle 25-90 —Gas Engine



...FOR EVERY 100 CENTS OF ITS PRICE

THAT'S a quick description of the TICO Engine—the choice of most oil men. The TICO Engine is chosen by oil men because of its performance, reputation and for its good operating characteristics. And that ought to be reason enough why you should make sure of getting your money's worth. Order TICO Gas Engines —the preferred oil field engine equipment.

Unique features of the TICO *4-Cycle 25-90 H. P. Gas Engines*

- Extra long stroke
- Easy hand or air starting
- All reciprocating parts and governor enclosed oil tight
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- Two piece cylinder head

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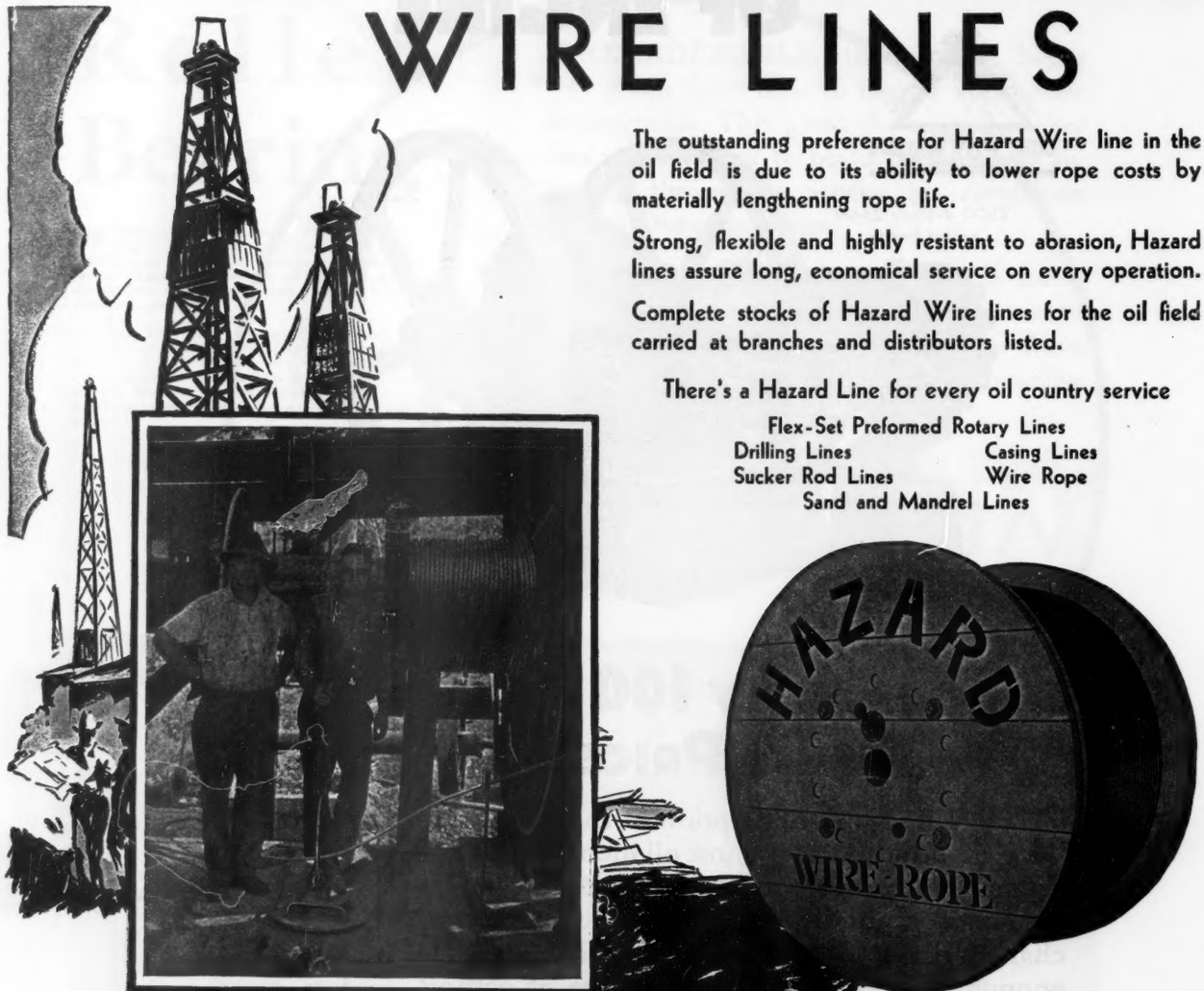
WIRE LINES



Hazard Wire Drilling Line in the Bristow Field
RIGHT—F. A. Dalton—Driller
LEFT—A. Walkenback—Tool Dresser

The outstanding preference for Hazard Wire line in the oil field is due to its ability to lower rope costs by materially lengthening rope life.

Strong, flexible and highly resistant to abrasion, Hazard lines assure long, economical service on every operation.

Complete stocks of Hazard Wire lines for the oil field carried at branches and distributors listed.

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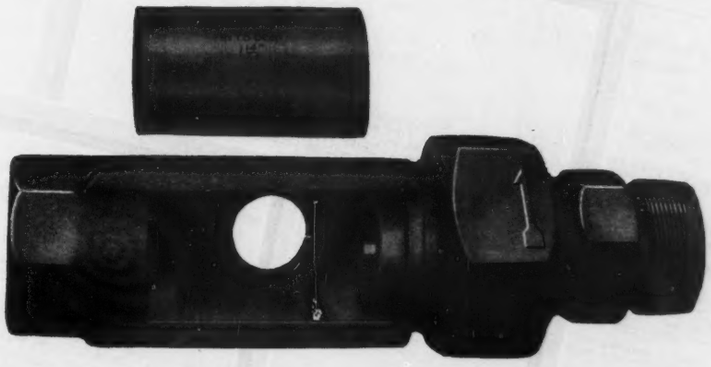
has a lot to do with flow control or any other oil field operation

Whether it be in the launching of a conservation program or any one of a dozen other field operations, you will find that MacClatchie equipment will do the work more inexpensively and efficiently . . and with less trouble and maximum safety . . . for MacClatchie Quality Products are developed by engineers who are in constant touch with the needs of the field man.



MacClatchie Flow Nipple and Bean. Prices have just been reduced so radically that you cannot afford to make your own beans or use any other device. This flow control specialty has found a place in high pressure fields throughout the world . . . its efficiency and safety are unquestioned. Nipples fit 3″ or 4″ pipe threads, and the beans, which can be used in nipples of either size and are easily redrilled, are made with orifices of all sizes from 7/32″ to 1¾″.

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Quality, as evidenced in economical performance, is responsible for the fact that there are more MacClatchie Mud Pump Valves used than any other make.

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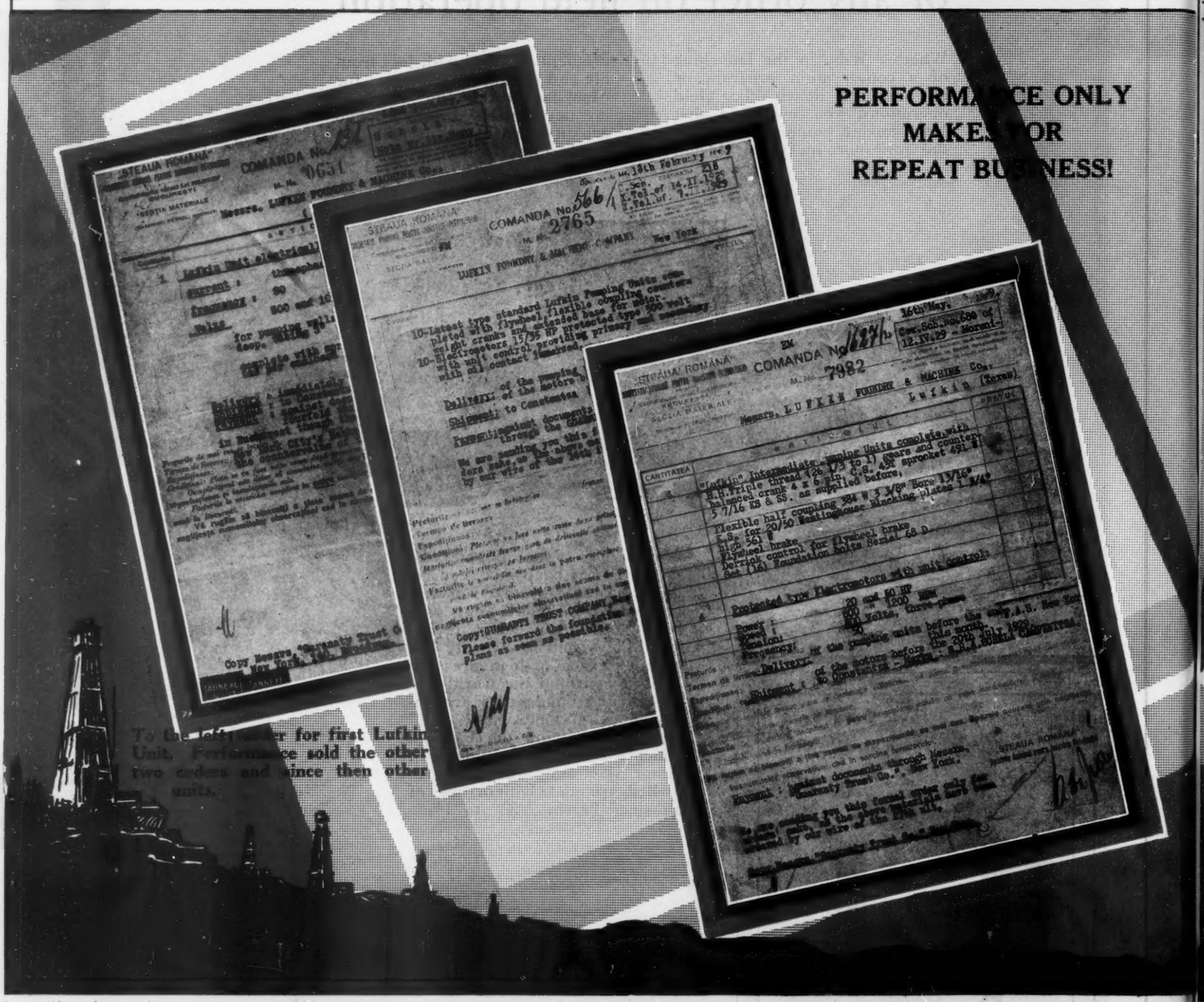

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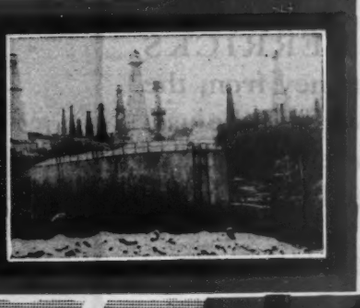
Lufkin Units in the Moreni Field in Roumania

The pictures tell the story. The first order from the "Steaua Romana" came without inquiry—merely stating well conditions and power available. A suitable Lufkin Unit was furnished including auxiliary equipment. The pictures, top right, show installation about completed of the initial equipment . . . to the left are the orders that followed and since that time have come other orders. The *repeat orders* followed *performance* as a natural sequence.

Some idea of the rough rugged terrain of the Moreni field, to which Lufkin Units are particularly adapted, can be gained from the views of the field, lower right.

BACK OF REPEAT BUSINESS MUST BE PERFORMANCE . . . IT IS THAT THING THAT KEEPS LUFKIN UNITS WELL IN ADVANCE OF THE FIELD.



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Ideco Derricks have never been successfully imitated

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HAD TO BUILD A Derrick equal to modern drilling requirements—SO WE DID.

Bring on your hard jobs—the harder the better—and IDECO will handle them.

IDECO DERRICKS save *you* money from the start and will still be useful long after they have been charged off the books.

Illustrated here is one of the new 136-foot Ideco Steel Derricks used for deep drilling in California.

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Refinery Section Starts on Page 122

Gasoline Situation Weak Link in Chain

Highest daily average estimated total production in 1928, week ended Dec. 29, 2,585,844 bbls. Lowest in 1928, May 19, 2,338,241 bbls.

Maintaining Conservation Movement and Crude Oil Price Structure Will Rectify Conditions Within 60 Days

Highest daily average estimated light oil production in 1928, week ended Dec. 29, 2,158,134 bbls. Lowest in 1928, Mar. 3, 1,927,713 bbls.

By Andrew M. Rowley

With the crude production situation stabilized and operators in all flush producing areas in accord in efforts to continue to hold output to market requirements and maintain the balance between supply and demand, the weak link in the whole structure at this time is the depressed condition of the gasoline market. Refiners are making too much gasoline and many have been selling the product at prices below the actual cost of manufacture. While this is the season of the year when an increase in the quantity of gasoline in storage is to be expected, the present rate of gain is abnormal and, in addition to weakening the present market, will be reflected, naturally, on conditions next summer.

There are two solutions to the problem which affects producers of crude oil as well as refiners. The first and seemingly logical remedy is for refiners at this time to curtail runs to stills and hold production of gasoline down more nearly to winter requirements. While this would lessen the demand for crude temporarily, the production branch of the business has demonstrated its ability to hold production of crude to requirements. The second solution is for producers and crude oil buyers to keep the present conservation movement 100 per cent effective and maintain the present crude oil price structure.

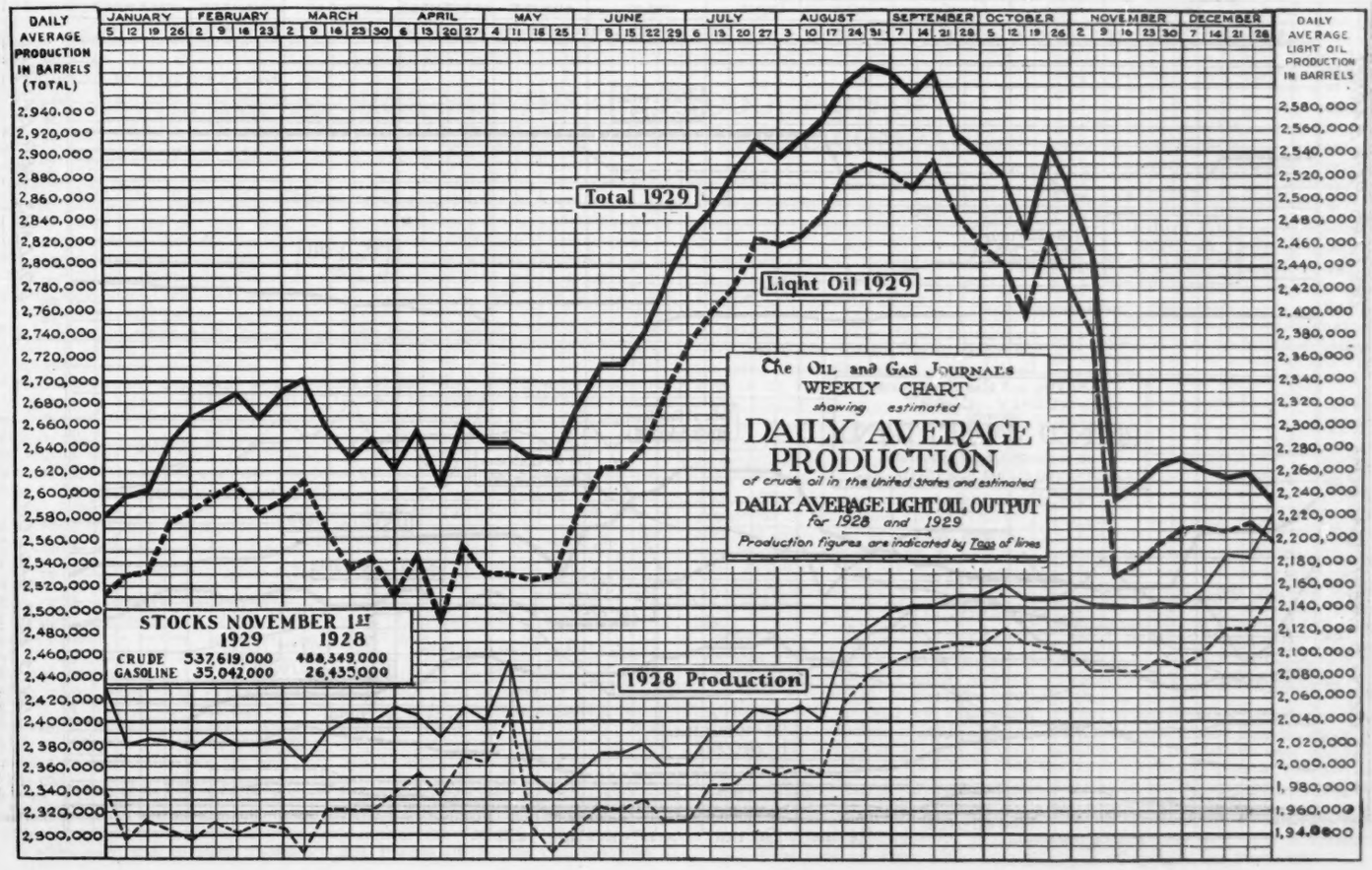
Conservative refiners admit many refiners are selling gasoline below the cost of manufacture and are continuing this operation on the expectation of a reduction in crude oil prices. They cannot long continue this policy and as soon as they become convinced there will not be a reduction in crude oil prices there will be only one thing for them to do—close their plants or curtail their runs to stills. Either process would have the effect of lessening the quantity of gasoline being manufactured. It has been stated if crude oil producers hold production down to market requirements and the crude price structure is maintained, the gasoline situation will rectify itself within the next 60 days simply because many refiners will have to stop making gasoline to be sold at below-cost prices.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of light and heavy gravity oil in the United States for week ended December 28, and a comparison with the previous week follows:

	Dec. 28		Dec. 21	
	Light	Heavy	Light	Heavy
Oklahoma—				
Oklahoma City	79,115	.....	65,480	.....
St. Louis-Pearson	50,705	.....	51,415	.....
Seminole	217,655	.....	225,870	.....
Northern Miscellaneous	241,920	.....	234,810	.....
Southern Fields	57,410	.....	57,385	.....
Total Oklahoma	646,805	.....	634,960	.....
West Texas—				
Hendricks	93,830	.....	95,420	.....
Yates	140,105	.....	141,406	.....
Remainder	110,976	.....	114,109	.....
Total West Texas	344,911	.....	350,935	.....
North Louisiana	32,780	5,210	33,385	5,480
Arkansas	18,910	41,705	18,885	43,040
North Central Texas	138,943	.....	139,703	.....
Texas Panhandle	102,596	.....	110,850	.....
East Central Texas	23,317	.....	21,444	.....
Kansas	113,410	.....	111,935	.....
Total Mid-Continent Area	1,421,672	46,915	1,422,097	48,520
Gulf Coast	.....	176,397	.....	178,987
Southwest Texas	.....	54,398	.....	56,544
Eastern	139,000	.....	136,000	.....
Rocky Mountain Area	67,938	.....	71,932	.....
California—				
Santa Fe Springs	163,000	.....	175,000	.....
Long Beach	105,000	.....	105,500	.....
Huntington Beach	41,000	.....	41,000	.....
Elwood	26,000	.....	34,000	.....
Ventura Avenue	51,000	.....	51,000	.....
Seal Beach	29,000	.....	30,000	.....
Remainder of State	159,000	115,000	150,000	120,000
Total California	574,000	115,000	586,500	120,000
Total United States	2,202,610	392,710	2,216,529	404,051
Grand Total	2,595,320		2,620,580	

Total Decrease, 25,260 Bbls.; Light Oil Decrease, 13,919 Bbls.



Little Trading in Oklahoma Market

Prices on Principal Refined Products Except Fuel Oil and Gas Oil Sag. Curtailment of Output Necessary to Strengthen Gasoline

By C. O. Willson

A generally heavy market with the exception of fuel oil and gas oil featured the last week of the year in the Oklahoma (Group 3) market.

The slow market with lower quotations in several products has brought considerable pessimism regarding the refinery outlook for the first month of the new year. This is particularly true of gasoline and kerosene which have been weak for the past 90 days and which are now at the lowest price level of the year. The more optimistic believe that the extreme dullness in new business of the past 10 days was a normal development of the holiday season and they predict that buying in practically all products will improve the first of the year.

There is a general agreement that the supply of gasoline is too great for the available demand. Refinery crude runs in many instances are being maintained at or near the high point of the year. This is true not only of the Mid-Continent but also other refining areas in the United States. In addition there is a steady expansion in cracking facilities in all areas and this adds materially to the gasoline production. Finally there is the increased production of natural gasoline which for the entire United States is running about 35 per cent greater than a year ago.

Reduce Gasoline Prices

Several refiners in Oklahoma and other Mid-Continent areas who for several months have been quoting the top of the gasoline market in their sales to jobbers in an endeavor to prevent a complete demoralization of the market are changing their policy.

They have lowered their prices on the 58-60 U. S. Motor grade from one-quarter to one-half cent a gallon and in a few cases at least they are selling at lower prices when it is necessary to meet competition. In the words of one refiner, "it is useless to endeavor to support the domestic market with prices in line with prevailing crude oil costs until some of the distress material available from several refiners is removed from the market."

At the start of the new year about the only constructive factor in the Mid-Continent market so far as the gasoline prices are concerned, is the export business which was placed early in December for January and February shipment. This export business in November and December made it possible for several refiners to confine their domestic sales to regular jobber outlets usually based on contracts. The position of many of these refiners will be the same in January and February.

At the same time many refiners are being forced to run considerable gasoline to storage and these accumulations will become excessive if they continue for another 90 days. In the case of two or three large refiners in Oklahoma the fall season ended with substantial quantities of gasoline in storage. One refiner is reported to have stated that his company had as much gasoline in storage at the end of November as would be needed to start the spring consuming season next year. Just what the sales policy of these companies will be from now to April 1 when the domestic demand will show improvement is problematical. If they decide to stop further storage accumulations at their plants and become active in the spot market still lower prices are assured.

Fear Tank Wagon Cut

The low gasoline tank car prices in the Mid-Continent present a constant threat to the tank wagon and service station price structure in the Middle West and Southwest. Price cutting in retail sales is prevalent in the large consuming centers.

There is the usual dissatisfaction among jobbers who buy on contracts based on published quotations with maximum spreads between tank wagon and tank car prices. Wide spreads between

(Continued on Page 138)

REFINED MARKET BAROMETER

Refinery gasoline prices in several areas were under pressure during the past week and many price concessions were reported. The active competition of California gasoline in the eastern markets is being felt by East Coast and Gulf Coast buyers and several large sellers are giving concessions to secure business. Largely the same situation exists in the Middle West and Mid-Continent where the supply of gasoline available on the spot market exceeds the demand, which is exceptionally light, due to cold weather. There was little active trading in any product the last week of the year and price trends were mixed. Fuel oils and gas oils continue strong at interior points although there is an excess supply at some of the coastal points with lower prices in effect. Natural gasolines have followed the price decline of the refinery grades. Kerosene is weak in the Mid-Continent and Middle West with no change at other points. The furnace oil movement is heavy at steady prices. The various grades of lubricating oils are freely available at lower prices whenever any changes are made. The wax market is inactive with buyers endeavoring to obtain additional price concessions.

Mid-Continent—Fuel oil and gas oil market generally strong with good movement of furnace oil distillates. Domestic grades of refinery gasoline and natural gasoline weak. Kerosene weak. Little activity in spot demand for lubricants and wax.

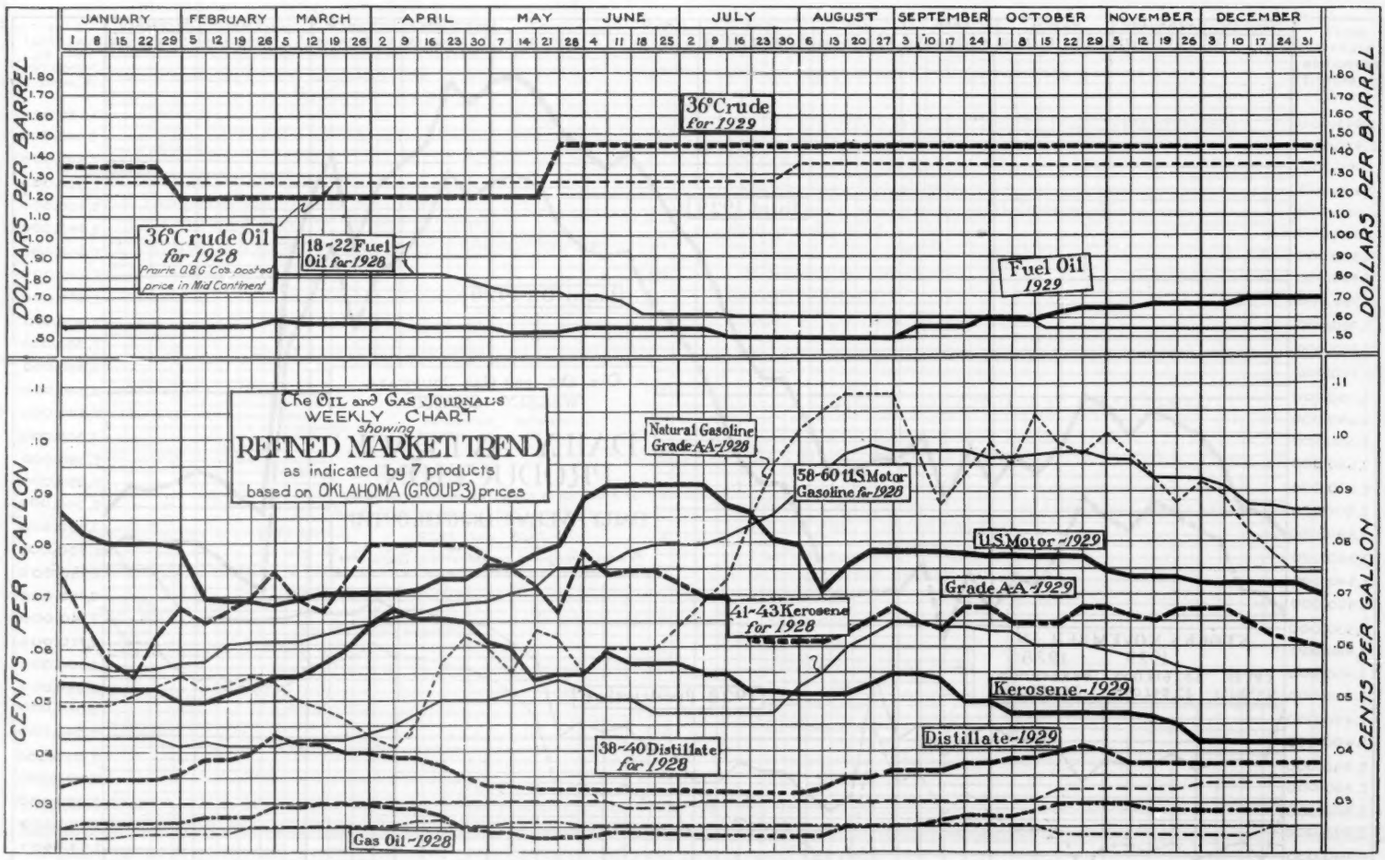
East Coast—General weakness in refinery gasoline and many price concessions reported. Kerosene and furnace oils strong. Continued weakness in paraffin wax and cylinder stocks. No change in fuel oils. Gas oil steady.

Pennsylvania—Few price changes in any products despite slow movement. Better demand for cylinder stocks and some grades of neutral oils expected after first of year.

California—Gasoline prices for West Coast shipment unchanged. Prices lower for East Coast movement. Other products unchanged.

Gulf Coast—Gasoline and kerosene prices unchanged for export and domestic movement. Fuel oil weak.

Chicago—Demand centers in high gravity fuel oils and gas oils. Gasoline weak. Kerosene demand slow. Other products unchanged.



Central Power Pumping at Seminole

Pure Oil Co., After Considerable Engineering and Research Work, Has Evolved System for Use on 80-Acre Lease

By L. G. E. Bignell
Petroleum Engineering Editor

In looking back over the history of the Seminole, Okla., oil fields it would seem that this district has always presented rather unusual problems to the production men and engineers, first in rapid drilling with rotary equipment in what was then new territory, later the application of the gas-lift to reclaim the oil quickly, and morely recently to finding means of producing the remaining oil in an economical way.

In the Maud Field of the Seminole area several of the production companies are now faced with the necessity of lifting the oil from the Misener sand bodies and recovering as much as possible of what remains and also in doing this at a lower cost than it has been possible with the gas-lift or beam pumping methods.

One of these companies is the Pure Oil Co., which has given considerable thought to this problem and now proposes to try a method, which, while not new in its general application, has not been used in the Seminole district before and should therefore be of interest to operators there and elsewhere as presenting a possible means of pumping their wells.

Power Pumping

On the E. D. Lindley lease, being the west 80 acres of Section 18, Township 8n, Range 5e in the Maud Field, the Pure Oil Co. has eight wells spaced in accordance with the usual Seminole practice, that is, one well to each 10 acres, so that there are three wells along the west and three along the east side of the property in a north-south line.

All of these wells are drilled to the Misener sand and have not encountered water with the oil up to date. As their rate of decline has been very normal for several months past, the daily production of each well being about 50 bbls., this lease seems to offer favorable conditions for trying out the use of the power pumping method.

Power pumping, or central plant pumping, has been in use for many years in many fields in the east and west, as well as abroad, so that its description here is not considered necessary.

The application of this kind of equipment to wells more than 3,000 feet deep is somewhat unusual and as the Misener sand is found at about 4,200 feet depth the use of powers for pumping has had to have very careful consideration in all its phases before the trial could be made.

A power is being installed at about the center of the Lindley 80-acre lease. With it will be placed an 80 horsepower gas engine that will drive the 30-foot diameter by 24-inch face band wheel using a 22-inch endless belt with an idler of special design. This belt is approximately 180 feet long and 6-ply.

No line shafting is used with this outfit, the power from the gas engine being delivered through a cut-off coupling clutch with a 30-inch diameter 24-inch face pulley, the crankshaft of the engine being extended to receive the pulley, the end of this shaft being carried on an outboard bearing.

The power wheel will run at about 16 r. p. m. and is mounted on a self-supporting 15-inch diameter spindle which runs in marine type bearings that are oiled by a pressure feed system.

The power is provided with two eccentrics, the upper being 30-inch offset and the lower 24 inches and the wells will be connected to them in such a way as to allow each well to pump throughout each 24-hour period without pumping off.

Preliminary Tests

To determine the possibilities of applying this type of pumping equipment to this lease it has been necessary for the Pure Oil Co. to do considerable preliminary work which has consisted of compiling complete decline curves of each well and extending these curves to give some estimate as to the probable length of time the wells will continue to produce. This was done to determine whether the probable life of the wells would justify the new equipment cost.

It was also quite necessary to give careful study to the individual well conditions to determine what amount of power would be required to lift the oil from each, and by a series of very carefully conducted dynamometer tests on the beam pumping apparatus it has been found that the maximum load is about 12,000 pounds per well. These tests were completed and the engineering data on the lease conditions were available and used to lay out the power system.

Balanced Conditions

In order that the load on the power would be as nearly equal in every direction it has been decided to use 1-inch diameter pull rods from the eccentrics to the wells and three-fourths inch sucker rods in 2-inch diameter tubing in each well. The pumps at the bottom of the hole are to be of similar types and so stroked as to lift only the predetermined amount of fluid that can be pumped from each particular well without pumping it off.

The oil is 38 degree A.P.I. gravity and as there is no water accompanying it decision was made to run this unit 24 hours each day in order to avoid complications that might arise from hook-offs on some of the wells while others were still able to continue producing.

With uniform size tubing, rods, gravity of oil and rate of production, it is thought that balanced conditions will be attained, but later it is planned to check all of these conditions by a series of dynamometer tests to be conducted with two instruments set simultaneously at the power end of the pull rods and at the well.

Such a series of tests will show the power loss in the pull rod lines, as well as permit determination of the length of stroke and displacement of the working barrels and traveling valves at the bottom of the hole. With these data at hand it will be possible to make such further adjustments as may be necessary to keep the wells all pumping at uniform rates throughout the 24-hour period.

All wells have been surveyed and the holes were found to be fairly straight, the greatest deviation from the vertical being only 76 feet total, which on a 4,200-foot well is not bad.

To avoid the use of hold-ups and hold-downs along the pull rod lines it is intended to grade the surface wherever possible and as the surface contour of the lease is not very uneven this method is expected to give satisfactory results.

There will be some ravines to be spanned by the rod lines, the deepest about 22 feet, where the rods will be supported in the usual way.

The power has been placed as nearly as possible in the center of the lease and the building is set in an east-west direction which permits the rod lines to lead to each well with the use of the least possible number of swings.

To determine the most efficient type of pump jack for each well and compile data for future use it is intended to try out several well-known types of jacks. The installation of these jacks at the wells presents some problems because each well has a cellar under the derrick, which cannot very well be filled with loose earth and then a concrete block cast on top of it, and on the other hand it is hardly economical to fill the whole cellar with concrete.

Some intermediate methods will be devised to permit the proper installation of the pump jacks, for with loads such as this installation is required to handle they must be securely anchored to a firm foundation.

Salvage Material Important

The fact the Pure Oil Co. needed equipment such as is now over the Lindley wells for other work and the installation of the central power would release it for transfer was one of the determining factors in the decision to make this change. It is therefore proposed to remove the steel derricks, steel fronts, rig-irons, counterbalances, engines, etc., from the Lindley lease and transfer them to other locations.

By a careful check it has been found that the value of this salvaged equipment will represent more than the amount that would have to be spent if new material of like character had to be purchased for the other operations. The 122-foot drilling derricks and other equipment will be replaced by shorter derricks with pump jacks and the central power.

The wells are now being pumped on the beam, with counterbalances, and gas engines used for power. With this type of equipment it has been customary to pump the wells off each day, and therefore the machinery was in use only part time. Some of the wells are equipped with combination strings of rods—seven-eighths and three-fourths inch—and some trouble has been experienced due to rod breakage.

Dynamometer tests on the wells as now equipped show that they all have about the same load, and it is estimated that their gas-oil ratio is about the same.

The wells are provided with casing-heads and shut in to a pressure of from 1 to 3 pounds at the oil and gas separators, the pressure on the traps being necessary to deliver the gas to the gathering lines of the Amerada Petroleum Corp., which handles it through their natural gasoline plant.

The survey of the Lindley lease shows that with the central power located in the middle of the 80 acres the rod lines will be about the following lengths.

To well No. 1	1,050 feet
To well No. 2	1,050 feet
To well No. 3	1,150 feet
To well No. 4	1,135 feet
To well No. 5	550 feet
To well No. 6	400 feet
To well No. 7	350 feet
To well No. 8	525 feet
Total	6,210 feet

This layout will permit the pumping of the wells without counterbalances.

The power equipment and the engine is to be installed in a wooden frame building covered with corrugated sheeting and the floor and foundation for the spindle and wheel and the engine will be of concrete, making this installation of a permanent nature.

The power unit is rather massive, weighing about 28,000 pounds, but is so balanced that the spindle does not have to have additional bracing for the anchor bolts in the concrete foundation will keep the unit in place.

While this installation will only have eight wells at the start, it is so arranged

(Continued on Page 126)

NINE MONTHS OIL PRODUCTION OF LEADING OKLA.-TEXAS COMPANIES

By James McIntyre

Seventy-two oil companies, firms and individuals, each of which produced an average of 1,000 bbls. a day or more in the first nine months of 1929 were responsible for 88.85 per cent of all the oil produced in the State within that period. Out of a total of 221,814,834 bbls. the 72 leading companies produced 190,441,926 bbls. while all the others, at least 1,220 operators, produced only 31,272,908 bbls. The average production of the 72 leaders in the nine months was 9,689 bbls. per day while the average production of the 1,220 others was 94 bbls. per day.

The Gulf Production Co. was the largest producer in the State in the nine months, with a total gross production of 22,849,352 bbls., a daily average of 83,701 bbls. per day. The Humble Oil & Refining Co. was second with a total of 18,595,148 bbls., a daily average of 68,113 bbls. and The Texas Company third with 12,559,953 bbls., a daily average of 46,007 bbls.

The eight companies in the list included in the so-called Standard Group, the Humble Oil & Refining Co. (Standard of New Jersey); Southern Crude Oil Co. (Standard of Indiana); Magnolia Petroleum Co. (Standard of New York); Mid-Kansas Oil & Gas Co. (Ohio Oil Co.); California Co. (Standard of California); Atlantic Oil Producing Co. (Atlantic Refining Co.); Midwest Exploration Co. (Midwest Refining Co.), and Prairie Oil & Gas Co., produced a total of 69,957,953 bbls. while the same number of non-Standard companies, Gulf Production Co., The Texas Company, Yount-Lee Oil Co., Transcontinental Oil Co., (including the Marland Oil Co.), Phillips Petroleum Co., Pure Oil Co., Sun Oil Co., and Big Lake Oil Co. produced 71,099,086 bbls. The Shell Petroleum Corp., the largest foreign-owned company, produced 9,900,496 bbls. and ranked fifth in the list of producers.

One remarkable feature of the production of Texas is the case of the Yount Lee Oil Co., a Beaumont company, locally owned, which produced 8,344,073 bbls. most of which came from the Spindletop Pool. This company opened the deep production in Spindletop and its production last year, most of it from Spindletop, totaled 12,350,865, and in 1927 totaled 14,720,228 bbls., which is an average production in the two years and nine months of over 35,000 bbls. per day.

Fifty-seven companies in Oklahoma produced 1,000 bbls. a day or more in the first nine months of 1929, and of these the Prairie Oil & Gas Co. was the leader with a total of 13,366,408 bbls., a daily average of 48,961 bbls. The Magnolia Petroleum Co. was second with 12,137,613 bbls. Sinclair Oil & Gas Co. third with 11,385,053 bbls. and the Gypsy Oil Co. fourth with 11,068,279 bbls.

The eight leading companies in the

(Continued on Page 136)

Essential Points in Use of Geophysics

Factor of Economy Should Determine Whether This Method Is to Be Applied. Difficulties in Application Explained

By E. U. von Buelow
Geologist and Consulting Geophysicist, Denver, Colo.*

In discussing the use of geophysical methods in solving the problems of the oil industry it seems unnecessary to detail the many successes these methods have had. The most important factor, however, still seems to be as it has been in years past, that some methods have been over estimated and the importance of others not sufficiently recognized. Therefore it seems advisable to briefly outline some of the possibilities of our present geophysical methods and devices and especially to explain where the difficulties in their application are, and under which conditions they will be of real economic value. The fundamental demand for every geophysical as well as other method is economy and this factor should definitely control the decision whether or not it shall be applied.

Practical geophysics uses the reaction of physical properties of minerals and rocks for the solution of problems of economic geology. It therefore is essential that a geophysicist first should be a geologist. The geophysical instrument so to say is a unit, unchangeable in its physical properties and constants and also in its principles and limitations, understandable also to a person not especially trained in physics. But in applying it to geological problems the correct choice of the method and instrument, aside from knowledge of its possibilities and limitations, absolutely requires the full understanding of the manifold changing geological conditions particular to the problem. Besides, the reaction of any geophysical measurement is purely physical and absolutely unchangeable. The computation of the result is a matter of pure mathematics, which means is as unchangeable as the physical reaction. But in most cases a number of corrections has to be made for various other influences and these often have to be based on geologic assumptions. The interpretation of the results finally is the most important part of any geophysical survey, and this means the translation of the purely physical and mathematical result into practical geology. This requires special geologic training and wide practical experience, and only with this is it possible to reach correct geological conclusions, especially since the physical result of the instrument often permits different geologic interpretation. The mistake in having a physicist without such special geologic training make the interpretation of the results, even nowadays often is made, and in case such interpretation is erroneous, the instrument or method is, in most cases, blamed for the failure to arrive at the proper solution of the problem.

Beyond Experimental Stage

Of course, we all had to learn and to gradually develop the instruments and methods. But geophysical instruments now have been commercially used for more than 10 years (in the United States since 1923) and are far beyond the experimental stage. We have a large number of well trained geophysicists with wide knowledge and experience and we should, therefore, cease to repeat mistakes made in earlier days.

Geophysical methods can be dealt into two fundamentally different branches: (a) Measurement of natural forces and properties in the earth's field which always are present and beyond our control or influence, and (b) measurements of artificially created forces which to a certain degree can be controlled by us. Because of this it can be seen that the latter branch is superior to the former, for it is clear that if we can control the force we want to measure, we are at liberty to create just as much of such force as we desire and eliminate surplus. We may, furthermore, at will, create such artificial force at any desired place and in any desired way and may also, so to say, tune in our instruments for such a force in order to eliminate or at least partly eliminate possible interference by natural forces of the same type, so that we may obtain only such reaction as we need for the solution of the particular problem.

The methods of measuring natural forces in the earth's field are the gravimetric, magnetic, self-potential-electric, radioactive, and geothermic methods. Artificially created forces are measured by the seismic and the electrical methods. The advantages and disadvantages of each of these methods, possible interferences and their commercial value will be separately discussed.

The Gravimetric Method

The field of gravity in the earth's crust changes from place to place. The earth's normal field is influenced by the occurrence of rocks of different density (specific weight), by folds and faults, and other subsurface irregularities, and by the topography of the surface. But within the limits of geological changes such as erosion, present folding or faulting and the gravimetric attraction from outside forces, as stars, etc., it is unchangeable. This means that aside from such stellar influence (tides) there is no daily or other short periodical variation of the earth's gravimetric field.

There are two types of gravimetric measurements: The pendulum and the torsion balance method. The first measures absolutely or relatively the total force of gravity at the particular place, the latter only the horizontal gradient of such force. Both methods, however, measure total influences, no matter where they originate, and it is impossible to eliminate in the measurements themselves any part of such total influence. Therefore, if such influence partly or totally arises from depths far below our reach and especially if it is a total of several causes, the interpretation of the readings is extremely difficult and can only be based on more or less hypothetical assumptions. Conclusions drawn from such results as to geologic occurrences in the uppermost beds of the earth's crust, which alone are of commercial interest, therefore sometimes are rather uncertain.

The Pendulum Method

As stated above the pendulum measures absolutely or relatively the total force of gravity. Absolute determinations of the total attraction of the earth are extremely difficult and the instruments very delicate. For industrial purposes relative measurements in all cases will be sufficient and also are somewhat faster and easier to make. But the pendulum method for industrial purposes is rather inaccurate, i.e., the instrument is too unsensitive. The maximum sensitivity of such instruments for relative pendulum observations is only 1×10^{-3} cgs. On account of this fact only large geologic structures and certain shallow salt domes can be detected and no detail work is possible. On the other hand every pendulum station can be directly compared with every other such station irrespective of distance as long as all such stations have been referred to the same base station. This has certain advantages above torsion balance measurements. The pendulum instrument also is only slightly influenced by rough topography—except by high mountains where, however, the influence might be mathematically computed and deducted with sufficient accuracy. This allows application of pendulum measurements at many places where the more sensitive torsion balance would be of little value.

Aside from the fact that they can reveal only the major geologic occurrences pendulum measurements require very high skill and are rather expensive. Their economic value, therefore, in most cases must be doubted and, with few exceptions, they will be of real aid only to theoretical geology.

The torsion balance measures two units of the field of gravity: the horizontal gradient and the differential curvature.[1] Both units are measured by the same instrument at the same time. Measuring only the horizontal vector of the force the torsion balance can give results only in case a gravimetric change in the horizontal occurs. Uniform horizontal beds, therefore, will not react on the instrument. The measurements can also be related to each other under the assumption that between two torsion balance stations the change in the horizontal vector is linear, an assumption which in many cases does not quite meet the facts. Such direct relation from one torsion balance station to another, therefore, should only be made at very short distances (not over one-half mile) and even then this uncertainty factor should constantly be kept in mind in the interpretation of torsion balance results. Especially no interpretation should be based on the so-called "lines of equal gravity" computed under such assumption. They may, however, be taken for assistance.

Due to its sensitivity the instrument is greatly affected by surface irregularities.

(Continued on Page 67)

[1]D. C. Barton: Amer. Inst. M. & M. Eng. Techn. Pub. No. 50, 1928.

*This manuscript was received from Dr. von Buelow on October 5, 1929.

*Published by permission of the director, United States Geological Survey.

[1]Reinders, Kolloid Zeitschrift, 13, 235, 1913.

[2]Hofmann, Zeit. Physik. Chemie, 83, 385, 1913.

[3]Davey. 4th Colloid Symposium Monograph, page 38.

E. U. VON BUELOW

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FORMATION OF OIL FIELD EMULSIONS PRESENTS AN INTERESTING PROBLEM

By P. G. Nutting*

If oil and water be shaken vigorously together in a bottle or test tube, an emulsion is formed which soon separates completely on standing. But if oil and mud be shaken together, the emulsion formed is a thick paste that not only does not disintegrate on standing but resists heating and chemcial reagents to a remarkable degree. The oil used may be crude or refined, heavy oil, gasoline or even ether. The mud used may likewise be almost anything; sand, clay, road dirt, metal powder or fibrous dust mixed with water. The mud may be acid or alkaline. Gasoline and clay mud make a convenient pair to experiment with.

We get a clearer picture of what the oil, water and solid particles are doing if we take merely muddy water and shake it up with gasoline. The oil and water now separate clear quite quickly, leaving the solid particles in the form of a thin skin at the interface and on the glass wall. It is quite startling to see a clay suspension, that would not settle clear in months, changed to clear water in a few minutes by shaking with gasoline. The skin formed by the fine particles is quite tough and may be lifted out on a wire like a piece of wet rag. On drying it returns to a powder, indicating that no permanent chemical change has taken place. The solid particles cannot spread (like a liquid) at an interface and being themselves insoluble, can only absorb the two liquids and mesh together.

Reinders[1] in 1913 made similar observations with powdered metals and insoluble salts in water shaken with ether, kerosene, the alcohols, etc., and stated the theory very clearly—the interfacial tension between the two liquids must exceed the sum of the other two. Hofmann[2] about the same time made an extended series of similar observations. Wheeler P. Davey[3] in 1926 read a paper before the Fourth Colloid Synposium giving the theory of the formation of cup grease, which is a carefully prepared emulsion of water, soap and heavy oil. Davey's idea is that the long soap molecules (sodium stearate) in such an emulsion all have their small OH ends turned inward toward the water droplets and their larger CH_2 ends turned outward toward the oil. The meshing together of these bristling units (like hair brushes or chestnut burs) makes a stiff paste of the cup grease. Heating to 250° C. completes the dispersion and removes excess moisture.

Formation of Emulsions

Evidently the conditions for the formation of an emulsion are two liquids which do not mix and are not very soluble in each other and a finely divided solid insoluble in either. These solid particles may be anything from fine sand down to soap molecules—a chain of fifty or more atoms. Perhaps even small ions could be washed out of a solution with gasoline but for their kinetic motion kicking them apart. With such a three-phase system only violent agitation is necessary to bring about the necessary contacts.

In the oil fields, with oil, water and

(Continued on Page 126)

Soil Corrosion and Proper Coatings

Bureau of Standards Preparing for Three-Cornered Tests. Manufacturers and Pipe Line Industry Especially Interested

By Charles E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 30.—There is a widespread misunderstanding in respect to the relationship between the Bureau of Standards and the pipe line industry in connection with the investigations carried on by the bureau on the subject of soil corrosion.

The Bureau of Standards is attempting to identify the factors which cause the corrosion of buried pipes and to develop methods of estimating the corrosiveness of soils and of determining the effectiveness of materials which may be offered for the reduction of underground corrosion losses.

The purpose of these investigations is to eventually place before the pipe line industry an aggregation of facts obtained from tests by which that industry will be enabled to test its own samples of soils and protective coatings and to determine for itself specifications to meet its requirements in various parts of the United States.

Started Tests in 1922

The Bureau of Standards began its study of pipe line protection by starting tests of certain types of coatings in 1922. Additional types of coatings were added to the tests in 1924 and in 1926. In 1929, with the co-operation of the American Gas Association and about 20 manufacturers of coatings, it started tests of 42 additional coatings nearly all of which are being tested as proprietary coatings. The tests of proprietary coatings were undertaken because a large portion of pipe line men interested in coatings desire information regarding the performance of the materials which are commonly offered for their consideration. The tests were open to all coatings whose makers wished to participate in the tests, and were willing to conform to the conditions set for them. The chief of these were that the manufacturers should bear part of the costs of the tests and furnish specifications or descriptions by means of which their products could be identified.

The proprietary coatings were applied to 2-foot sections of pipe and there is some question as to the relation of the results of such tests to the behavior of coatings on working lines. For this reason the so-called "three cornered" tests have been proposed. These tests of coatings applied to oil lines are to be conducted jointly by the American Petroleum Institute, coating manufacturers and the Bureau of Standards. The number of coatings which can be applied to a section of a line where soil conditions are uniform is in most cases very limited and consequently only a few coatings can be tested in one locality. The Bureau of Standards believes that it does not possess sufficient data to justify its selection of a very limited number from the large number of proprietary coatings available, and the proposal has therefore been made that the three-cornered tests deal with the types of coatings. The selection of the materials to be tested will probably be made by the American Petroleum Institute subcommittee on pipe line corrosion, after consultation with the manufacturers of protective coatings.

No Bureau Specifications

It is a settled policy of the Bureau of Standards not to formulate specifications for protective pipe line coatings and there is no indication that this policy will be abandoned in the future.

The avoidance of government specifications promulgated by the Bureau of Standards was recently shown when a government agency requested the bureau to provide specifications for a protective coating to prevent soil corrosion. This agency was furnished with all available information concerning tests that had been made but they were informed that the bureau itself was not prepared to write such specifications. The specifications were prepared by this agency itself. Later a private company referred to them as Bureau of Standard specifications but this misconception was promptly corrected by having it made clear that they could not be so regarded as they were not the product of the bureau itself.

The fact that the functions of the bureau in relation to protective pipe line coatings are not understood is evident by requests frequently made to recommend a suitable pipe line coating for designated localities. There are also frequent applications for the bureau to examine and pass upon the merits of proprietary protective coatings. All of these cases lead to explanations concerning the work of the bureau, which as indicated is the determination of a great body of facts concerning the problem of soil corrosion which, in the hands of intelligent scientific workers, may assist them in the selection of suitable methods and materials to protect pipe lines.

The bureau does not believe it is in possession of sufficient information to permit the drawing of specifications for protective pipe line coatings and no estimate can be given when, if ever, it will feel warranted in drawing up such specifications.

The bureau is not prepared to test proprietary coatings for manufacturers or consumers. Such testing is the function of commercial testing laboratories and it would be unfair for the bureau to complete with these institutions.

The information on tests of coatings which the bureau has is available to anyone who wants it but at present the bureau does not have a method of testing coatings that it would care to recommend as satisfactory for determining the merits of coatings.

The bureau staff engaged in the study of underground corrosion and protective coatings consists of five men on the bureau pay roll and three research associates. About 125 organizations are cooperating in the work by furnishing materials for tests, labor for burying specimens, assistance in interpreting data, etc.

To Remove Specimens

Beginning next February the bureau will remove specimens of pipe material

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Lawyers to Study Conservation

Committee of Nine From American Bar Association Expected to Devote Virtually All Its Attention to Plans for Saving Oil

By Thomas F. Smiley

Announcement this week of the 1930 Mineral Conservation Committee of Nine from the Mineral Section of the American Bar Association is accompanied by the statement that the committee will hold its initial meeting this month in Chicago, with the problem of oil conservation occupying the major place in its program. The personnel of this year's committee folows:

Representing the public interest, primarily—Chester I. Long, chairman, Washington, D. C., former president American Bar Association; Professor Walter Dodd, head of Department of Constitutional Law, Yale University, New Haven, Conn.

Representing the solid minerals generally—William V. Hodges, of Hodges, Wilson & Rogers, Denver, Colo.

Representing the copper industry—W. L. Murphy, of Murphy & Whitlock, Missoula, Mont.

Representing the bituminous coal industry—D. F. Strother, of Strother, Sale, Curd & Tucker, Welch, W. Va.

Representing the petroleum industry—Earle W. Evans, of Evans, Vermilion, Evans, Carey & Lisseston, Wichita, Kans.; Paul Gregg, general counsel Union Oil Co., Los Angeles, Calif.; Louis Foster, general counsel Sun Oil Co., Dallas, Tex.; J. C. Denton, general counsel Mid-Continent Petroleum Corp., Tulsa.

The Committee of Nine is not designed to represent any particular mining industry, but it must consider any question of mineral conservation from the viewpoint of public interest. By force of circumstances the committee hitherto has been obliged to give virtually all of its attention to petroleum conservation and it seems likely that the committee for 1930 will find itself under the same necessity.

Four Lawyers Represent Oil

Only four lawyers on the committee could be considered as directly representing the petroleum industry and they come from the four important oil-producing states of California, Texas, Oklahoma and Kansas. By design the oil lawyers do not constitute a majority of the committee. The two first named on the committee, Chairman Long and Professor Dodd, are not connected with any mining enterprise and will represent the public viewpoint. Three others, Mr. Hodges, Mr. Murphy and Mr. Strother, represent different branches of the solid mining industries, including copper and coal.

The new committee is regarded as constituting an especially strong body of lawyers. While the four oil lawyers, Mr. Evans, Mr. Gregg, Mr. Foster and Mr. Denton, will bring technical knowledge to the committee and a thorough comprehension of the many proposals for oil conservation, confidence is expressed that in any conclusion reached by them the public's side will have full recognition.

As important decisions of policy are to be reached at the first meeting of the committee, the council of the Mineral Section of the American Bar Association will be called into session at the same time. The program that will be outlined there will be that agreed to by both the committee and the council of the section. Emphasis is given to the statement that it is not the purpose of the Bar Association or any department of it to intrude in the question of petroleum conservation or any similar problem relating to the various mining industries. The Bar Association was asked to give legal advice on the matter of petroleum conservation by the Federal Oil Conservation Board. It has functioned in that way in the past and it is the announced purpose of the association to continue to do so.

Foundation of Opinions Needed

It is pointed out, however, that both the technical and the economic phases of the petroleum problem must be considered by the committee, not only because of the Federal Oil Conservation Board's request, but to establish a foundation for legal opinions that may be formulated by the committee. It is because of this necessity that some of the men on the committee must have a knowledge of oil and gas law, of the conservation laws of the states they represent, of the various conservation proposals that have been made and of the tendencies of these.

It is expected that the first action of the new committee will be to appoint a subcommittee to study the question of petroleum conservation. This subcommittee, it is believed, will consist of the four oil lawyers and Professor Dodd, authority on constitutional law. As producing and conservation conditions in the four oil states represented differ, the appointment of a man from each of the states is looked upon as imperative. A similar subcommittee on conservation of the solid minerals probably will be appointed.

To assist the subcommittee on petroleum conservation it is expected that subcommittees not drawn from the membership of the Committee of Nine will be set up in each of the four important oil-producing states. It is understood that these local subcommittees will consist of two classes of lawyers, first those identified with the petroleum industry, and second those not connected with the industry whose local standing is such that the recommendations of any subcommittee will not have the character of a recommendation by the petroleum industry.

To Study Constitutional Questions

The subcommittee from the Committee of Nine and the local subcommittees, acting in conjunction, are expected to study again all the proposals that have been made for oil conservation that involve legal and constitutional questions, whether the proposals include suggestions for legislation or not.

The work so undertaken may involve one of two things primarily, or perhaps a combination of them. First, it may be agreed that the existing conservation laws of each of the states under consideration might be amended so as measurably at least to meet the question of conservation. Second, it may be found that the California Gas Law, with perhaps some modification, is an acceptable measure of conservation for adoption in the other important oil-producing states. Finally, it may be found that a model conservation statute for adoption in each of the states is the more desirable and workable remedy.

While these studies proceed, it is regarded as certain that the committee will not advance its views unless the Federal Oil Conservation Board asks for a report and unless the state of opinion in the petroleum industry indicates that a report of this kind would be acceptable.

Pressure Factors in Oil Production

Influence of the Gas Associated With Crude Is One of Most Importance. Natural Gas or Air as Drive Medium

Prepared by R. H. Pence for the Bessemer Gas Engine Co.*

"Petroleum as it occurs in the natural reservoirs exists under pressure. The pressure on the reservoir is a combination and balance between the rock pressure and fluid pressure. The rock pressure is due to the weight of the overlying strata, the tendency toward compacting, the pressure induced by folding, cementation, or otherwise closing the pore spaces by rock flowage or encroachment of igneous intrusions and subsequent metamorphism. The fluid pressure may be resolved into gas and hydrostatic pressure. The hydrostatic pressure is due to the weight of the water column in the communicating pore interstices. The gas pressure is the resultant of the pressure in the reservoir at the top of the oil surface. The total resultant of these pressures is known as the reservoir pressure. Before a reservoir is penetrated, the reservoir pressure is uniform throughout the reservoir. The pressure increases with the depth, and hence of two reservoirs on the same structure, the upper will be under the lesser pressure. For petroleum to be recovered from a reservoir, there must be a differential pressure between the pressure at the point of penetration and the reservoir pressure. This differential pressure must act in such a direction as to force the petroleum from the reservoir into the well. In other words, when a well is successfully completed, the pressure at the point of penetration is diminished to such an extent that a differential pressure of sufficient amount to overcome the forces resisting relief is affected. This relief of reservoir pressure is resisted by forces of capillarity, friction, and pore spaces, so fine as to prevent movement of the hydrostatic column. The difference between the differential pressure and the forces resisting relief is the net effective pressure which affects the extraction of the petroleum.

Gas Factors in Production

"The influence of the gas associated with the oil in the reservoir is one of the most important factors in production. The expulsion force of the gas is effective in bringing the petroleum to the well. Due to the nature and characteristics of gas under pressure, the expulsion force tends to be prolonged and the pressure maintained by the expansion of the gas as the pressure is slightly decreased and as more gas is freed from solution in the petroleum. As the pressure is slightly decreased in the reservoir, gas which has been held in solution in the petroleum is freed and in gaseous form continues the expulsion of the petroleum through the reservoir. The gas thus freed acts as a force moving the petroleum from the reservoir and as a carrying agent in transporting small amounts of petroleum through the pore interstices. After the pressure is reached when no more gas is liberated from solution in the petroleum, the continued production must depend entirely upon the water following up the reservoir. If the water, from one cause or another, does not readily move up the reservoir, the production ceases. In any event, the removal of the gas factor in production causes an immediate drop in production and a decrease in the ultimate recovery percentage."[1]

It has been estimated that the gas dissolved and associated with the oil under the original reservoir pressure is sufficient to produce 1 bbl. of oil from every 8 bbls. as it occurs in the sands under the methods as have been practiced. It has otherwise been estimated that from 10 to 20 per cent of the total oil is actually produced. This leaves a much greater amount in the formation than is produced. Sand cores taken from old fields after years of producing amply substantiate this as they show a surprising saturation.

The area immediately surrounding a well will get the benefit of maximum pressures and thus the sand will be more completely drained than remote areas. The oil in these areas will have to move under a reduced pressure and in the last period of extraction will probably be nearly dormant. There is also the probability of the gas coming from the oil at a distance escaping through channels in the more depleted sands near the well without moving oil with it.

Propulsive Agent

It is evident that a propulsive agent must be introduced into the sand to move this relative dead oil from the remote areas to the well. The most feasible method of recovering a portion of this dormant oil is to duplicate as nearly as possible the original forces in the reservoir. The most promising manner of restoring these forces appears to be the forcing of gases into the oil sands through a few of the wells on the property[2]. Air and natural gas are the only gases that are available in large quantities and at small cost. Other gases, such as flue gas, manufactured gas, or carbon dioxide, might be used, but as yet their cost is prohibitive.

The use of gases removes a large percentage of the remaining oil and does not preclude the possibility of some future treatment to wring out more oil from the treated sands. No practice should be followed which would leave the sands in such a state that no further exploitation could be made.

Natural Gas or Air as Drive Medium

There has been much discussion regarding the choice of drive mediums in repressuring depleted sands. Therefore a discussion of results as derived in an experiment, conducted by D. B. Dow and L. P. Calkins of the Bureau of Mines[3], on the effects of air and gas on different crude oils is presented.

"The experiments show that gas or air in solution have an effect on the viscosity of the solvent oil. The rate of change is dependent upon the amount of gas dissolved, the nature of the oil, and the kind of gas dissolved. Thus a crude of high initial viscosity will show an appreciable change with even small amounts of dissolved gas; whereas, a crude with a low initial viscosity shows only a small change even when several times as much gas is dissolved.

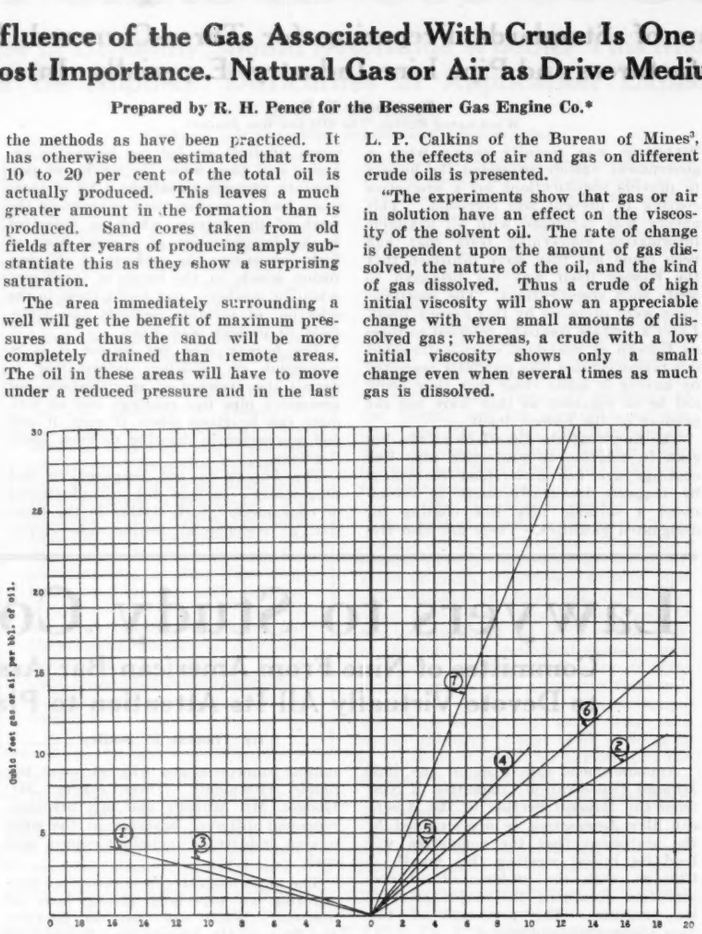


Figure 5—Viscosity change in per cent. Curves 1 and 2, air and natural gas in Wyoming crude, 550 sec. viscosity at 100 degrees Fahrenheit. Curves 3 and 4, air and natural gas in California crude, 577 sec. viscosity at 100 degrees Fahrenheit. Curves 5 and 6, air and natural gas in California crude, 284 sec. viscosity at 100 degrees Fahrenheit. Curve 7, natural gas in Oklahoma crude, 68 sec. viscosity at 100 degrees Fahrenheit.

"The data obtained in these determinations have been converted and are shown in Figure 5, where the amount of gas dissolved per barrel of oil is plotted against the percentage of increase or percentage of decrease in viscosity. Curves 1 and 2 represent the effects on a Wyoming crude with an initial viscosity of 550 seconds Saybolt at 100 degrees Fahrenheit. Curve 1 shows that when air is dissolved in this particular crude, the viscosity is increased approximately 16 per cent when the crude contains 4 cubic feet of dissolved air per barrel. Curve 2 shows a decrease of 18.5 per cent in the viscosity when 11 cubic feet of natural gas is dissolved per barrel of oil. Curve 3 represents the increase in viscosity resulting when 3.5 cubic feet of air are dissolved in a California crude which had an initial viscosity of 577 seconds at 100 degrees Fahrenheit. Curve 4 shows a decrease in viscosity of 10 per cent when 10.2 cubic feet of natural gas was dissolved in a barrel of the same crude. Curve 5 shows that there is a slight viscosity decrease when air is dissolved in a California crude of 284 seconds initial viscosity, whereas the same oil undergoes a much greater decrease in viscosity when natural gas is dissolved, as shown in Curve 6. Curve 7 represents the percentage decrease in viscosity of an Oklahoma crude (68 seconds, initial viscosity) when natural gas is dissolved.

"These curves are all based on viscosities at 100 degrees Fahrenheit with the highest pressure at 250 pounds per square inch, thus the end of each curve represents that pressure. It was considered unwise to attempt hypothetical extensions of these curves to cover higher pressures, since such extensions would indicate that in the case of decreasing viscosity, the decrease in viscosity would ultimately become 100 per cent which obviously could not be true.

Exception Noted

"It has been noted previously that an exception was made with regard to the accuracy of this work. With heavy oils, the accuracy is apparently quite satisfactory; whereas, with light crudes of low viscosity the accuracy is questioned. For example Figure 5, Curve 7, shows a decrease of approximately 13 per cent in the viscosity of an Oklahoma crude containing 30 cubic feet of gas in solution per barrel. The original viscosity of this crude was 68 seconds, hence the new viscosity according to these data would be about 59 seconds. It is quite possible that the experimental error might be responsible for as much as 5 seconds, and in such a case a change in the position of the curve might be material.

"In connection with the data taken on air solubilities and the viscosity effect, it should be noted that, as in the previous work, the amount of air coming out of solution is measured, and that no account is taken of any oxygen that may remain chemically combined in the oil.

"Although only one particular natural gas was used in this work, it is reasonable to expect that with a wet gas a greater change in viscosity would result, since, as shown previously, a greater quantity of gas would be held in solution at any given pressure. The effect from dissolved air on the viscosity of crude is of similar importance where compressed air is used in lieu of natural gas. As indicated previously, some oxidation may be expected. Lewis obtained analysis of air-gas mixtures delivered by wells that were producing by the Smith-Dunn process, and found that the oxygen content of the air had been reduced. Sligh passes oxygen through lubricating oils and thereby increases their viscosity. Probably the reaction is similar to the one taking place in the manufacture of petroleum asphalt, where air is blown through hot bodies of heavy residuum from the stills. Sligh obtains asphaltic bodies which were responsible for several changes in the oil other than change of viscosity. The writers bubbled pure oxygen through a sample of heavy California crude for 7½ hours, and found that the viscosity had increased from 577 seconds to 607 seconds (Saybolt Universal). In view of these observations it is reasonable to expect different viscosity effects on crude oil containing air in solution. The viscosity would be decreased as in the case of natural gas in solution, when no reaction took place, and would increase when oxidation occurred, some oils probably being more easily oxidized than others."

Use of Dry or Wet Gas as Drive Medium

In an experiment, conducted by Beecher and Parkhurst[4] on the effects of dry and wet gas dissolved in crude oil, certain findings warrant consideration. It was found that more wet gas was dissolved at a given pressure than dry gas under the same conditions, and that the resulting effects were much in favor of the wet gas.

Therefore, in the repressuring process, the question arises whether it would be better to use wet or dry gas, presuming that gas was available. In the recycling of the gas it would mean whether the gasoline should be extracted from the return gas, which represents a nice profit,

(Continued on Page 139)

*This is the tenth of a series of articles on air and gas lift. The first article of the series was published in the April 18 issue of The Oil and Gas Journal; the second, May 2; the third, May 30; the fourth, July 11; the fifth, August 15; the sixth, August 22; the seventh, September 12; the eighth, September 26; and the ninth, November 14.

[1]Phelps and Lake, "Petroleum Engineering," 1927.

[2]J. O. Lewis in Bureau of Mines Bulletin No. 148 gives excellent report on this method.

[3]Bureau of Mines paper, serial No. 2732.

[4]"Effect of Dissolved Gas Upon the Viscosity and Surface Tension of Crude Oil," Petroleum Development and Technology in 1926, A.I.M.E., New York City.

Magnetometer Study of Alabama Area

Several Sections Where Magnetic Highs and Lows Occur in Geologically Favorable Territory for Oil Prospecting

By L. Spraragen

"Actual prospecting for oil was first begun in this State in 1865, when the Watson wells were drilled in Lawrence County, though the Niles National Register, of August 14, 1841, gives an account of finding oil during dredging operations for the removal of the McGrew shoals on the Tombigbee River. . . . In 1890, a well was completed in Lawrence County, the production of which was reported at 25 bbls. per day. After the opening of the Spindletop Pool in Texas in 1901 prospecting was carried on much more briskly in this State and a number of test holes were completed in the Coastal Plain. The discouraging outcome of these tests caused a lull in developments, and it was not until 1916 that the discoveries in Oklahoma and Texas and the increasing price of crude oil spurred on the prospectors to additional efforts. Since then there has been a continual increase in development activity and at the present time there is no indication of waning interest."[1]

General Magnetometer Results

Plate 1 shows the general magnetometer results for the State of Alabama. These results are based on the readings of the United States C. and G. Survey. The stations together with the value of vertical intensity at each station are shown and the map has been contoured on a 100-gamma interval.

In previous articles it was shown that subsurface disturbances manifest their presence by a distortion of the lines of equal intensity. Plate 1 therefore indicates the existence of several of these disturbances.

The following low trends are shown:

1. From Tanner, Limestone County, to Hillsboro, Lawrence County.
2. From Woodville, Jackson County, to Hartselle, Morgan County.
3. From Fulton, Miss., through Russellville, Franklin County, to Moulton, Lawrence County.
4. From Center, Cherokee County, to Gadsen, Etowah County.
5. From Wetumpka, Elmore County, through Rockford, Coosa County, through Talladega, Talladega County, to Anniston, Calhoun County.
6. From Florala, Covington County, through Andalusia, Covington County, to Georgiana, Butler County.
7. Through Elba, Coffee County.

The following high trends are shown:

1. In the vicinity of Town Creek, Lawrence County, and Courtland, Lawrence County.
2. A few miles east of Athens in Limestone County.
3. In the vicinity of Huntsville, Madison County, and Gurley, Madison County.
4. Double Springs, Winston County, west through Hamilton, Marion County.
5. Hefflin, Cleburne County, through Ashland, Clay County.
6. Greensboro, Hale County, through Linden, Marengo County, through Butler, Choctaw County, to Waynesboro, Miss.
7. Evergreen, Conecuh County, through Brewton, Escambia County, to Atmore, Escambia County.
8. From Luverne, Crenshaw County, through Opp, Covington County.

For the benefit of those readers who have not followed this series of articles from the start, in The Oil and Gas Journal of September 27, 1928, attention is called to the explanation for distinguishing the high and low trends as given in The Oil and Gas Journal of December 20, 1928, page 25.

In the previous articles of this series it was also shown that by making a correction for latitude and longitude and applying this correction to the values shown on Plate 1 there will result the magnetic anomalies.

Magnetic Anomalies for Alabama

In order that all the maps published in this series might be pieced together, the corrections for latitude and longitude were computed with reference to the same base, that is at longitude 95 degrees west, and latitude 40 degrees north.

Plate 2 shows the magnetic anomalies obtained after the correction for latitude and longitude have been applied to the values shown on Plate 1.

Magnetic Highs

1. Town Creek, Lawrence County to Courtland, Lawrence County.
2. Gurley, Madison County.
3. Hartselle, Morgan County.
4. Double Springs, Winston County.
5. Guntersville, Marshall County.
6. Birmingham, Jefferson County.
7. Greensboro, Hale County.
8. Butler, Choctaw County.
9. Geneva, Geneva County and Ozark, Dale County.

Magnetic Lows

1. Tanner, Limestone County.

(Continued on Pages 64, 65 and 66)

[1]From Bulletin No. 22, Geological Survey of Alabama by D. R. Semmes.

Map of Alabama subdivided on the basis of oil possibilities. Prospects are believed to be best in Region III.

From State Geological Bulletin # 22

Figure 4—Outline map of Alabama showing the eight geological provinces. Provinces 3 and 7 constitute the more probable oil-producing territory of the State.

New Process in Dehydration of Crude

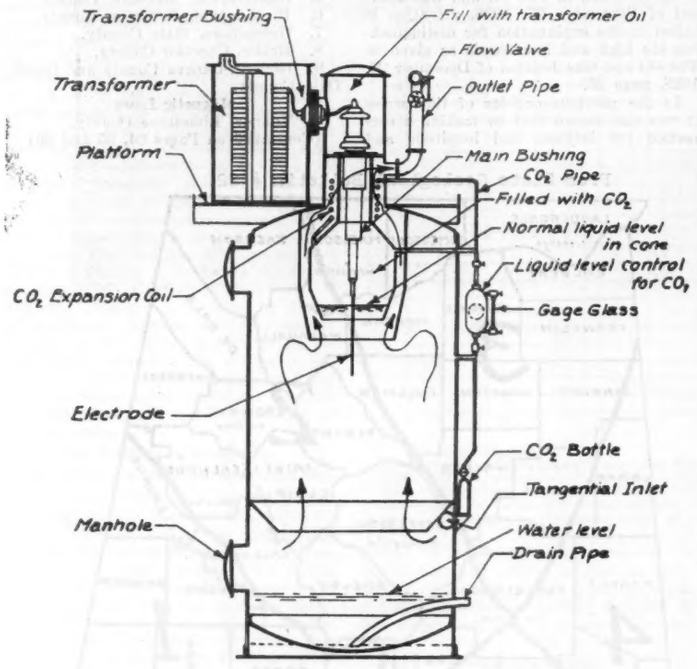
Method of Electrical Demulsification Has Been Operated Successfully on Pacific Coast. High Voltage Employed

By Col. Ernest H. Wilcox
Consulting Engineer, Los Angeles*

This article will describe an entirely new method for the electric demulsification of crude oil, new in the basic principles involved, new in all the details of its application, new in the results achieved and new in the economies effected.

It is not merely a refinement on hitherto known methods; it stands alone, a radically new principle, only slightly understood in its general effect, although recognized by research electricians, now applied for the first time to the practical service of industry.

Most natural petroleum oils contain certain amounts of water as they are produced from the earth. Water is generally contained in the same geologic measures as those in which oil is produced and carried, and water flotation is a major factor in the concentration of oil in the domes, anticlines and uplifts whence it is produced. Water may also enter oil measures from above or below through the medium of oil wells in which there has been a faulty shut-off of surface water, or where damage to or disintegration of the casing has permitted the water from another formation to enter the oil-bearing strata. The prevention of this water ingress is one of the major problems of the petroleum industry. It is not, however, with this phase of the problem that the present paper concerns itself; it is rather with the separation of water from oil after it has been produced. Seldom do we find a natural petroleum free from contained water. The amount carried may vary from less than 1 per cent to more than 50 per cent of the volume of the oil; occasionally oils carrying over 70 per cent of water in emulsion are encountered. Certain wells on some of the older fields actually produce over 90 per cent of water; however, the larger part of this usually readily separates into free water which can be drained off into waste, and oil containing further entrapped water. It is the process of the separation of this water from the containing oil that is known to the petroleum industry as "Dehydration."



SECTIONAL ELEVATION

Fig. 1.

Droplets and Particles

Water in oil may for convenience be said to occur in two forms, although there is not a hard and fast defined line separating these two classes:

(a) Droplets which ultimately would separate and settle out by gravity, spoken of as "Free Water."

(b) Particles, generally very minute, possibly molecular in size, more intimately blended with the oil by reason of the presence of an emulsifying agent, which will never settle out without special treatment, and spoken of as "Emulsion."

In case "a" above, time for settlement, quiescence, or freedom from agitation, the application of heat which reduces the viscosity of the oil, and increases the gravity differential of oil and water, and reduces the surface tension of the oil envelopes, will generally effect a satisfactory separation.

In case "b" the water particles are extremely minute, miscroscopic, in some cases possibly molecular in size, each particle being surrounded and isolated from its fellows by a tough elastic envelope or skin of oil. They are so minute that the gravitational pull on the water particle in the oil matrix is insufficient to rupture the oil envelope and so permit coalescence with adjacent particles. The presence of emulsifying agents, usually soluble salts, tends to assist in the more minute subdivision, and the stabilization of the water particles.

The problem of dehydration is to cause the rupture of the elastic oil envelopes so that the water particles can coalesce into larger droplets, and the carrying on of this process until the drops become sufficienly large that they will readily settle out of the fluid mass.

Emulsion of Two Types

Emulsions are of two types:

(a) Where the oil may be considered the matrix containing particles of water.

(b) Where water may be considered the matrix containing particles of oil.

In the ordinary practice of the oil fields, however, Type "a" is the only one that need be considered, although there may be occasions where the necessity of discharging water entirely free from entrained oil particles would lead to treatment of Type "b."

Oil containing emulsion will also frequently contain "free water" as well. The free water content may be reduced by settlement, the oil being allowed to stand undisturbed for longer or shorter periods. The separation will usually be greatly accelerated by the application of heat to the fluid mass.

Treatment of emulsions, on the other hand, requires more than heat plus time. Heat, unless it exceeds the boiling point of water, does not break the emulsions, fracture or disrupt the oil envelopes, or cause the coalescence of the water particles.

Various methods of treatment have been proposed, amongst others, vibratory, mechanical, chemical, filtration, evaporation, electric treatment. Most of these have a certain degree of success in some oils under favorable conditions. In some instances, a combination of two or more methods will give results where a single method fails, producing results which neither can produce alone.

This article will describe a new method of electrical dehydration of oil emulsions which has just been developed.

Up to the present there have been two, and only two, methods of the application of electricity to an oil body for the purpose of breaking down emulsions. Both of these depend on passing a current of electricity through the fluid, and only differ in the method of passage and intensity of discharge.

(a) The intermittent passage of powerful arc discharges through the fluid. This does cause coalescence of the water particles in the actual path of the discharge, but as a practical process this is ineffective and disproportionately expensive for the results achieved; no water particles are caused to coalesce except those in the immediate path, or at least immediate vicinity of the path of the discharge, and the successive discharges are likely to be somewhat sharply localized. Oil not passing through the area of the discharges is little, if at all, affected.

(b) The passage of a high tension alternating current through the body of the oil as it flows between two electrodes, so as to cause the alignment of the water particles into chains of droplets, which droplets tend to form conductive paths through the oil. An interruption of this current flow, either by intermission, by movement of one or both of the electrodes, or by any other means tends to cause a collapse of the individual droplets in the chain, and the formation of larger drops which can separate out.

Left to right: John M. Cage, the inventor; O. O. Howard, vice president, Dehydrators, Inc.; and Col. E. H. Wilcox, consulting engineer.

In marked contrast with these methods which pass an electric current through the emulsion-carrying oil is the process in use in the new development. Here no current passes through the oil, but a high tension charge of alternating sign is impressed on the oil. There is but one electrode; there is no flow of current from this electrode to another, or even to the walls of the tank. The charge of electricity on this electrode communicates an ionizing charge to the oil, which charge permeates the oil body to a certain but variable radial distance from the electrode; the work of dehydration is all done in this charge-permeated zone; and no current passes beyond this zone

(Continued on Page 102)

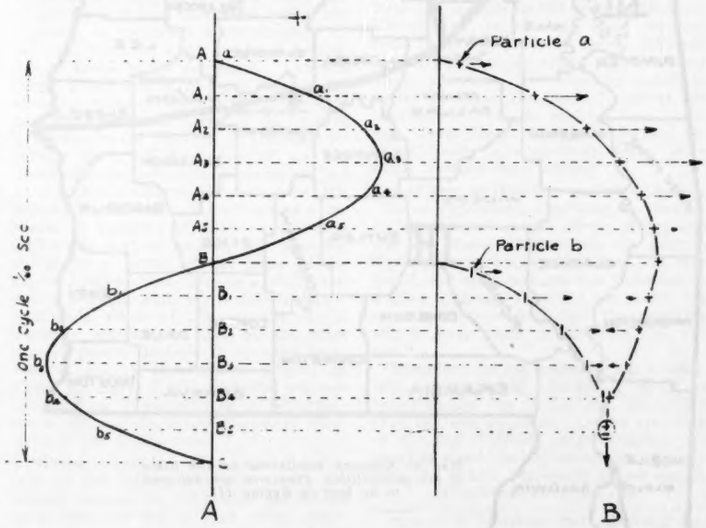


Fig. No. 2

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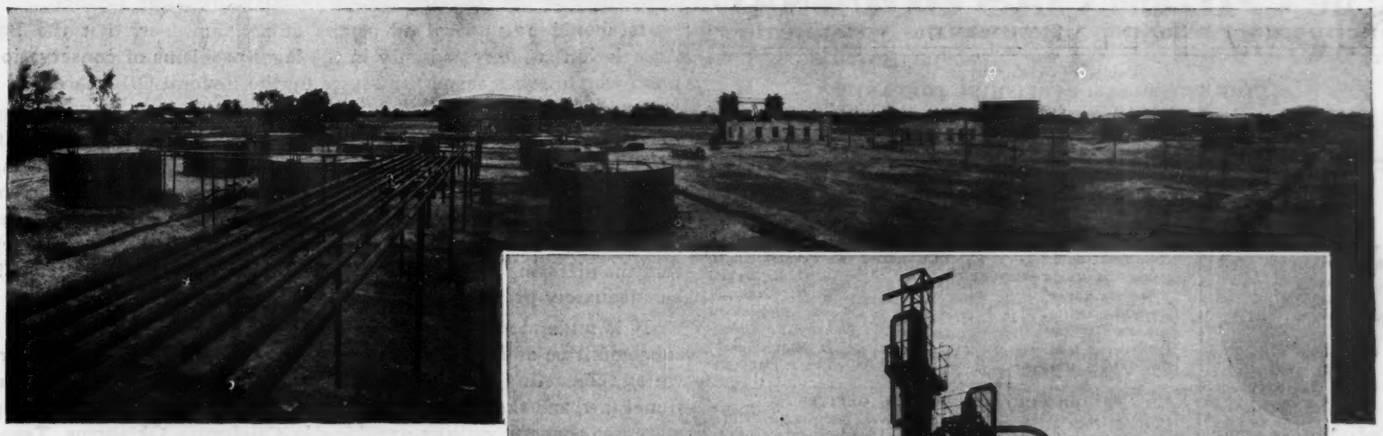

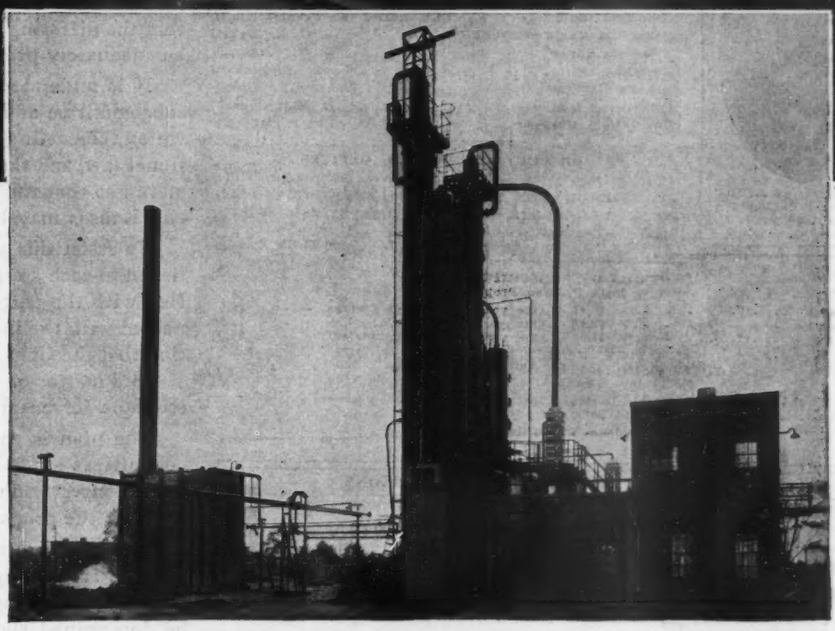

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THE LAW AND CONSERVATION

Now that conservation is being recognized by the oil industry, not as a temporary expedient but as a permanent policy, it may be well to examine its legal foundation as a precaution against possible upset hereafter.

What has been achieved has been accomplished through the voluntary action of the industry, ratified by state authorities. But there have been occasions as in California where objection has seemed on the verge of challenging it and it will be wise to take account of such a contingency.

Much interest, therefore, will attach to the coming meeting of the Conservation Committee of the Mineral Section of the American Bar Association to be held in Chicago this month.

Originally, it may be recalled, the Bar Association was invited by the Federal Oil Conservation Board to aid in considering the legal aspects of conservation, three members of the Minerals Section being appointed by the board to serve with three representatives of the Government and three representatives of the petroleum industry on the Committee of Nine, composed of Henry M. Bates, James A. Veasey, J. Edgar Pew, Abram F. Myers, Walter B. Brown, Thomas A. O'Donnell, E. C. Finney, W. S. Farish, and Warren Olney, Jr.

That committee, it may be remembered, suggested enactment by Congress of a law permitting co-operative development and operation of single pools and legalizing agreements in times of overproduction for curtailment of production.

It also suggested similar legislation by oil-producing states, and in furtherance of that suggestion the Committee on Conservation of the Minerals Section of the Bar Association, also of nine members, drafted two measures, one for voluntary and one for compulsory regulation, for enactment by the oil-producing states.

The members of this committee were Chester I. Long, James A. Veasey, Henry M. Bates, James W. Finley, Charles E. Martin, D. M. Kelly, John P. Gray, Paul M. Gregg and Frederick C. Proctor, the latter not concurring in the report.

These reports and recommendations were referred by the Federal Oil Board to the governors of those states, where, so far as has been announced, they still rest.

In the absence of action by Congress or the State Legislatures on these suggested measures and in view of the developments within the industry the legal phases could hardly be left in that shape.

Consequently another effort will be made by the Conservation Committee of the Bar Association to carry the study further.

It should be understood at the outset, however, that the Bar Association is interested only in the legal problems of conservation upon which it was asked for advice by the Federal Oil Board.

The new membership consists of nine members, two not connected in any way with any mineral interest, three representing different branches of the solid mining industries and four representing the four leading oil-producing states. This five to four alignment should protect the committee from any charge of being dominated by the oil industry while at the same time it assures the industry that the differing conditions of the leading oil-producing states will be adequately presented.

It is understood that the outcome will be the appointment of a subcommittee of five to consider the question of petroleum conservation, consisting of Prof. Walter Dodd, an authority on constitutional law, and the four lawyers representing the four oil-producing states, so that the varying problems in California, Oklahoma, Texas and Kansas may be thoroughly understood.

To assist this subcommittee local subcommittees are to be established in each state to consist of two classes of lawyers, those identified with the petroleum industry and outstanding lawyers not connected with the industry whose position will dispose of any assumption that the final report has been framed by the petroleum industry.

In a matter of this kind the industry cannot afford to leave any loophole for unfair criticism.

The plan is then to have the subcommittee and the local subcommittees study all the proposals that have been made for petroleum conservation which involve legal or constitutional questions whether the proposals include suggestions for legislation or not.

The object is to have a complete research into every phase of the subject, from a legal aspect. There have been sharp differences of opinion upon many points. It is possible that some of these cannot be determined short of the highest tribunal, but such a study as outlined ought to bring out all sides of the question and aid in the forming of judgment and the preparation of programs.

The probable action of the committee offers three possibilities:

A recommendation that the existing laws of each of the oil-producing states might be amended to embody a measurably satisfactory and workable conservation law.

An endorsement of the California gas conservation law, perhaps with some modifications to be adopted by the other oil states.

Or the framing of a model conservation law for adoption by each state.

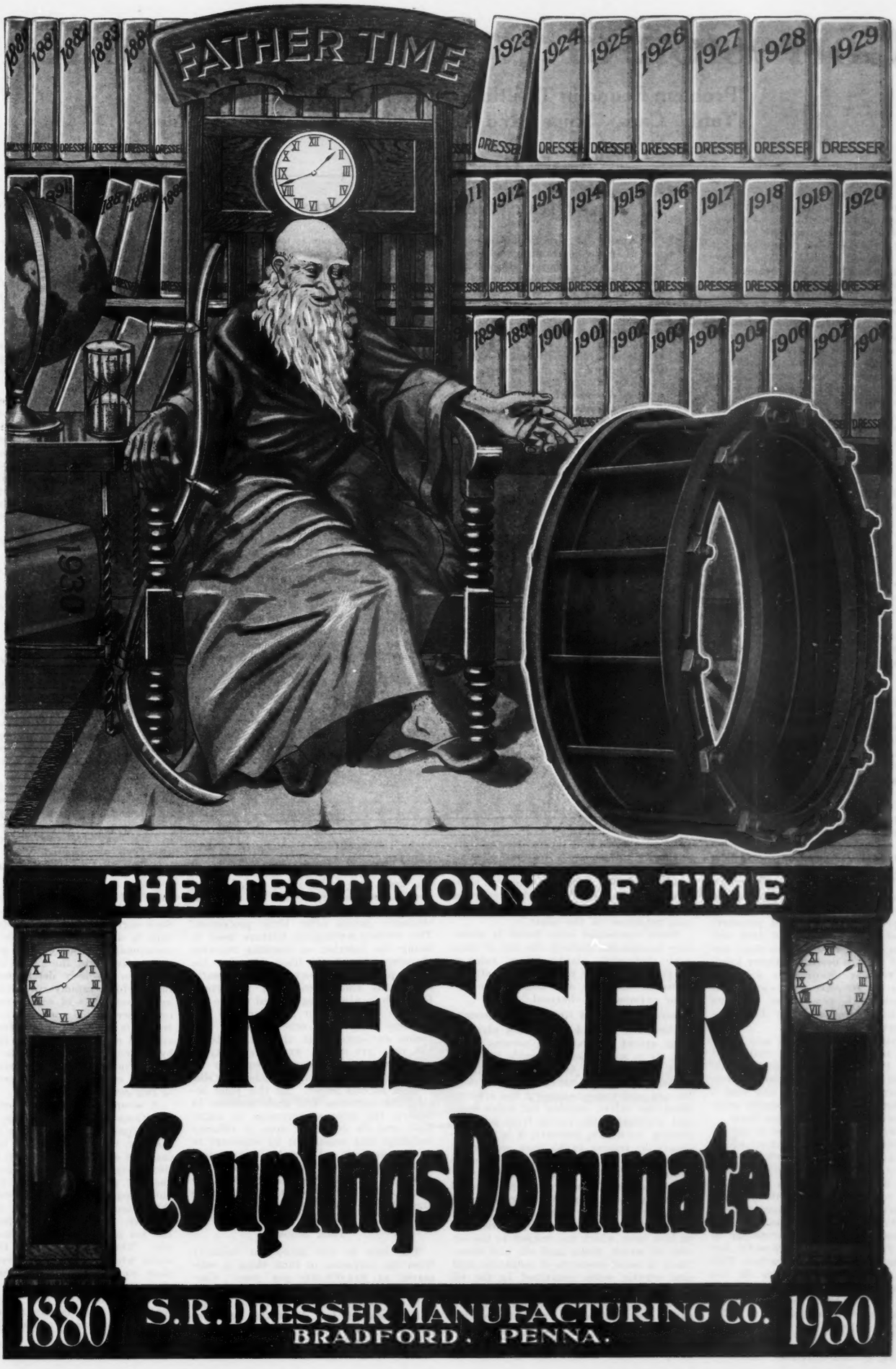
In its preliminary report the Federal Oil Conservation Board on September 6, 1926, suggested that "the lawyers familiar with the business of the oil operators take the lead in developing the needed line of action in accord with the discoveries of science and changes in engineering practice."

The earlier stages of the discussion were concerned chiefly, however, and naturally so, with defensive arguments designed to meet expected regulatory legislation likely to handicap and hamper the industry. With the education of the public about conditions in the industry that peril has been passed as reflected in the co-operation of state authorities.

The abortive conference at Colorado Springs on the state compact theory proved the impracticability of that panacea. The better way is indicated in the program outlined for the Bar Association committee—a thorough consideration of the whole question with distinct possible recommendations in view.

Amendment of existing laws in the oil-producing states may appear the simplest. The California law has yet to be proved by experience and upheld by the courts. Framing a model conservation law might be found much easier than having it adopted by each state.

It is not likely in any event that the committee can complete its study and formulate its recommendations for some considerable time. In the meantime the industry must continue to work out its own problems and in doing so may furnish the most valuable light to the committee.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Corrosion of Refinery Equipment

Problem Found in Treating Units, Natural Gasoline Plants, Tank Cars, Ships and Internal Combustion Engines

By Gustav Egloff
Universal Oil Products Co.*

Treating plants for petroleum distillates are subject to the corrosive action of the strong acids and alkalies employed, and of the acid sludge which is produced. The problems encountered here are not peculiar to the petroleum industry, but are those involved in the handling of corrosive substances in other chemical industries. For this reason they will not be dealt with here in detail. Lead lined pipe and ceramic pipe find employment in acid lines and agitators. Pumps, valves, pipes, and other treating plant equipment are often made of resistant ferrous materials such as Duriron. Everdur, a noncorroding bronze is also recommended for sulphuric acid and acid sludge lines. Acid proof brick is used in lining containers for storing and separating sludge acid. Corrosion resisting metals are also utilized in equipment for burning acid sludge.

In Natural Gasoline Plants

Plants for the recovery of gasoline from natural gas present several distinctive corrosion problems. In general, the corrosion from which they suffer is not severe, as the plants operate at low temperatures and moderate pressures, and do not make use of strong acids and alkalies. One important problem is corrosion by the water used in coolers, cooling towers, boilers, and engine jackets. In some sections, such as southern California, this corrosion is responsible for a large proportion of the cost of plant maintenance. In one plant the natural water available formed a large quantity of scale. If condensed water was used, corrosion was rapid on account of dissolved oxygen introduced when the water was cooled in a spray system for re-use. The water supply difficulty was surmounted by adding potassium dichromate to the water.

Vacuum lines allowing leakage of air corrode rapidly on the inside, especially if small amounts of salt water are present.

Hydrogen Sulphide in Gas

As in other branches of the petroleum industry, a large share of the corrosion troubles in natural gasoline recovery is due to hydrogen sulphide being present in the gas. This substance seriously corrodes compression and scrubbing equipment, especially when such equipment is operated at high pressure. At elevated pressures deposits of free sulphur and iron sulphide form, which erode piston rings and valves and tend to destroy cylinder lubrication. Frequent cleaning by steam is said to be an effective means of reducing corrosion. In compressor cylinders there is less corrosion under low pressure operation (35 pounds).

Hydrogen sulphide in fuel gas is reported to seriously harm gas engines. It is stated that 5 per cent of this substance will cause serious cylinder corrosion in natural gas engines, and that 1 to 2 per cent will in a few months cause marked deterioration of exhaust lines.

A further difficulty is found in the action of hydrogen sulphide on charcoal absorption gasoline recovery plants. One company states, "The most difficult corrosion problem we have is in connection with the operation of a charcoal gasoline extracting plant which treats about 20,000,000 cubic feet of residue gas daily. The gas contains a small percentage of hydrogen sulphide which apparently has a particular affinity for the carbon. This hydrogen sulphide accumulates in the carbon beds until there is apparently sufficient to start forming sulphuric acid. The absorbers are also operated as stills, steam being injected to vaporize the gasoline absorbed in the carbon, and undoubtedly this causes a reaction of some kind, resulting in the formation of sulphuric acid. The sulphuric acid in a short time destroys the screen beds supporting the carbon and also causes other corrosion problems in the plant."

Some companies have found it necessary to abandon entirely the use of charcoal absorption plants where sulphur-bearing gases were encountered, both because of corrosion and because the sulphur poisoned the charcoal.

Corrosion of Other Refinery Equipment

Corrosion of tank cars takes place to some extent but is not a serious problem. It is sometimes noticeable inside of tank cars used in transporting gasoline or kerosene, and at times has given trouble and annoyance because it has affected discharge valves, causing cut valve seats and preventing the valves from properly closing. As a rule, however, it is not necessary to remove tanks from service by reason of interior corrosion, because the tank sheets fail mechanically before they are rusted out. However, there is a field for an economical protective coating for the interior of tank cars.

Sweating of wax is usually carried out in iron pans which are subject to the action of water, steam and oil, and sometimes to small amounts of sulphuric acid and organic acids contained in the oil sweated out. Corrosion is usually quite rapid. Appearance of a small leak will cause discoloration of wax and occasion considerable loss. Tests have shown that monel metal, nickel, aluminum, and ascoloy (chrome iron) stand up very well under the conditions encountered in wax sweating.

Metal stacks, such as those of cracking units, are subject to rapid atmospheric corrosion by reason of the high temperature of gases which they carry. Ordinary paints offer little protection. The ceramic-waterglass mixture used in lining the interior of cracking reaction chambers has been tried out for the lower portions of stocks. It apparently lasts well and offers good protection. Research is also being carried out to develop a special paint for stacks.

There are several other types of corrosion encountered in the oil industry, but they are merely examples of types of corrosion encountered frequently in other fields, and call for no detailed discussion in this paper. To this class belong the corrosion and scale problem in boilers, the internal corrosion of water pipe, and the detriment done to refinery buildings and equipment by exposure to the atmosphere. Atmospheric corrosion, it should be stated, is often more intense in refineries than in other industrial establishments because of the large amounts of sulphur gases issuing into the air.

Tank Ships

The loss to the petroleum industry from the corrosion of tank ships is estimated at $14,000,000 per year. Corrosion of tankers has much in common with corrosion of steel merchant ships, but presents a few distinctive features. The most serious phase of this problem that is peculiar to the oil industry is the corrosion of gasoline tanks. One company finds: "The inside of cargo tanks which carry light volatile oils and are also subjected to the corrosive influences of salt atmosphere and salt water corrode very rapidly. This is doubly true of the cargo piping, as corrosion goes on both inside and outside of the pipe. There are but a few kinds of coatings or paints that can be applied to the interior of such tanks, as any with color are likely to discolor the cargo. Many paints have been tried, including the new lacquers that have been got out by the paint manufacturers, but these, as well as other paints, last but very little time and afford practically no protection."

Another company states: "Although we have experimented with many different protective paints, we have not found anything better than a good quality of red lead, applied by means of two coats on clean steel. It has been found advantageous to introduce a small amount of steam into the cargo tanks in order that any moisture which may have condensed on the surface of the steel may be removed. In other words the temperature of the steel should be slightly higher than the temperature of surrounding air."

A great deal of expense and trouble has also been experienced on tank steamers with the points of rivets corroding, making their renewal necessary. No real cause has as yet been determined for this wasting of rivets. It is more noticeable in tank steamers than in ordinary cargo ships in as much as there is more strain on the rivet points with liquid cargo, so that as soon as the countersink of the rivets begins to weaken, it is necessary that the rivets be renewed. No means of preventing this class of corrosion has as yet been discovered. One company makes it a practice that when a rivet is found partially wasted, at least to such an extent that the point is below the surface of the steel plate, it is covered with marine trowel cement, which usually stops further waste. Rivets have been preserved in this way for five years and more after corrosion had started.

Internal Combustion Engines

There is fear of corrosion of working parts of internal combustion engines when operated on fuels high in sulphur. Such corrosion is of two sorts. The first type is due to the fact that sulphur is occasionally encountered in gasoline in a very active form, the nature of which has not been precisely determined. Sulphur in this form rapidly corrodes the copper and brass parts of carburetor, feed line and other engine components. Such corrosion is genuinely to be feared, but is guarded against in present specifications by the copper strip corrosion test. Properly refined gasoline, no matter what its sulphur content, will not prove harmful in this respect.

A second form of corrosion, much less significant but much more advertised, may occur when, during the operation of a motor, water accumulates in the crankcase and sulphur oxides from the combustion gases dissolve in it to form sulphurous and perhaps sulphuric acid. Diggs[1] and Mougey[2] indicate that corrosion from this source may occur, but only in cold weather, in motors used intermittently and not provided with crankcase ventilation. They further show that it may occur when using fuel of very low sulphur content, as well as on high sulphur gasoline, so that the question of water accumulation and not of sulphur content of fuel is the primary factor.

(Continued on Page 127)

A VITAL PROBLEM IN INDUSTRY

Among the vital problems of the industrial world, none is more important than the corrosion of metals. Every metal which is used in large quantity will, under some conditions, waste away. Just as iron is the outstanding structural material, the rusting of iron is foremost among metal corrosion problems. Wherever iron or steel is used the danger of rust appears. No business, no country, is out of its path of destruction.

The world's loss through corrosion is tremendous. The mere cost of replacement of rusted or corroded parts is an economic waste really staggering. But this is but a part of the damage corrosion entails. A rusted article is often small and inexpensive. Yet its failure may imperil an entire structure and introduce grave hazard to life and property. Replacement of many parts at great expense may be necessary because one minor member has corroded to a dangerous degree.

An estimate of the loss due to corrosion of metals in the United States is $1,000,000,000 a year. When one considers that the country's business is estimated at $90,000,000,000 annually, one realizes the heavy toll this scourge takes. Throughout the world the value consumed by corrosion aggregates over $2,000,000,000.

In the American oil industry alone the corrosion bill for 1928 is estimated at $135,000,000. This is a tax of 15 cents on every one of the 900,000,000 bbls. of oil produced in that year. It is equal to a levy of 1 cent on each gallon of gasoline consumed.

Oil Industry Hard Hit

By reason of the range and variety of its operations, the oil industry is in a peculiarly unfavorable position as regards corrosion. There is scarcely a form which it takes that is not encountered in handling crude oil. The spheres of petroleum production, refining, and utilization must each combat its own problems in this field. Water or brine corrosion is encountered in oil wells, and underground pipe lines. Corrosion by chemicals affects plants for treating distillate oils. The sulphur compounds found in crude oil corrode oil casing and tubing, storage tanks, stills, and cracking equipment. All the problems of marine corrosion are met by tank steamers. Atmospheric corrosion shortens the life of tanks, steel derricks, and refinery buildings and equipment.

The damage by corrosion continues despite earnest endeavors to solve this problem. But enough energy has not yet been devoted to this subject. The forces at work must be multiplied to an army. Preventions of corrosion, cheaper and more widely applicable than any yet discovered are needed. Will it not be possible to discover inhibitors of the rusting of iron and steel, which incorporated in the metal in small amounts will obviate corrosion? Such substances would add to industry, economic and safety values beyond estimation. Their discovery is a goal worthy the striving of every researcher in metals.

*Before World's Engineering Congress at Tokio, Japan, October-November, 1929.

[1]Ind. Eng. Chem. 20, 16 (1928).
[2]Ind. Eng. Chem. 20, 18 (1928).

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THE OIL MAN'S CALENDAR

January 4-11—New York, National Automobile Show, Grand Central Palace.

January 7-10—New York, meeting, American Railway Association. Subcommittee on Tank Car Specifications, 30 Vesey Street.

January 9—New York, meeting, American Petroleum Institute, Board of Directors, institute headquarters.

January 9—New York, annual dinner, Society of Automotive Engineers, Hotel Pennsylvania.

January 11-16—Atlantic City, N. J., convention and twenty-seventh annual Road Show, American Roadbuilders Association, Auditorium.

January 14—Miami, Fla., aeronautic meeting, Society of Automotive Engineers.

January 19-25—Chicago, National Oil Show, Hotel Sherman.

January 20-24—Detroit, Mich., annual meeting, Society of Automotive Engineers, Book-Cadillac Hotel.

January 22-24—Boston, Mass., Independent Oil Men's Association of New England, American House.

January 23-24—Oklahoma City, Okla., Oklahoma Oil Jobbers Association, Huckins Hotel.

January 25-February 1—Chicago, National Auto Show, Coliseum.

January 27-31—Philadelphia, International Heating and Ventilating Exposition, Commercial Museum.

January 28-29—Milwaukee, Wis., Wisconsin Petroleum Association, Hotel Pfister.

January 30-31—Baltimore, Md., regular meeting American Society for Testing Material, Lord Baltimore Hotel.

February 11-12—Des Moines, Iowa, Iowa Petroleum Association, Fort Des Moines Hotel.

February 19-21 — Columbus, Ohio, Ohio Petroleum Marketers Association, Deshler-Warwick Hotel.

March 10-12—Shreveport, La., convention, Western Petroleum Refiners Association.

March 19-21—Detroit, convention, Michigan Oil Men's Association, Statler Hotel.

March 20-22—New Orleans, La., American Association of Petroleum Geologists, Roosevelt Hotel.

April 5—New York, 50th Anniversary Celebration, American Society of Mechanical Engineers.

April 5-13—Detroit, All American Aircraft Show.

April 7-12—Chicago, annual meeting, American Oil Burner Association, Stevens Hotel.

HONOLULU OIL CO. FORMED

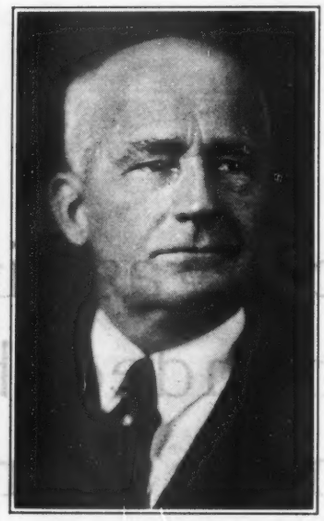
NEW YORK, Dec. 30.—Honolulu Consolidated Oil Co. has formed Honolulu Oil Co., a subsidiary, to develop holdings in Texas and New Mexico aggregating 40,000 acres. The new company has capital of 10,000 no-par shares. This is the third subsidiary of Honolulu Consolidated, the others being California Exploration Co. and Elwood Exploration Co. W. T. Fitzgerald, F. C. Hutchens, W. L. Hooloway, G. H. Elmore, and C. C. Freis are directors of the new company.

W. L. THOMAS DEAD

HOUSTON, Tex., Dec. 28.—William Littlejohn Thomas, land commissioner for the Gulf companies for 20 years, died at St. Josephs Infirmary following a heart attack in his office. In 1901 Mr. Thomas engaged in the abstract business in Beaumont. Later he became associated with the Producers Oil Co. Since May, 1910, he had been land commissioner for the Gulf companies.

J. EDGAR PEW WILL MOVE OFFICE TO PHILADELPHIA

FORT WORTH, Tex., Dec. 31.—The Mid-Continent Oil and Gas Association Wildcats, the social order of the association, will give a farewell luncheon for



J. Edgar Pew

J. Edgar Pew, vice president of the Sun Oil Co., at the Baker Hotel, Dallas, Friday, January 3. Mr. Pew is leaving shortly after the first of the year for Philadelphia to assume duties at the general offices of the Sun Oil Co. there.

Mr. Pew has been the prime mover in the standardization work of the American Petroleum Institute and is a former president of the Institute. He has had charge of the Dallas offices of the Sun Oil Co. and has directed the operations of that company throughout the Mid-Continent territory.

Late Fields

WEST TEXAS

FORT WORTH, Tex., Dec. 31.—In Ward County Shell Petroleum Corp.'s No. 1 Owens, Section 16, Block 5, H.& T.C. Survey, flowed 320 bbls. fluid in 24 hours ending 7 a.m. Monday. Three per cent of this production was water, total depth 3,075 feet. The company is now putting the well on pump.

In Andrews County Deep Rock Co.'s No. 1 Ogden, Section 6, Block A-46, has five 500-bbl. tanks full and a 10,000-bbl. tank is being erected.

EAST CENTRAL TEXAS

FORT WORTH, Tex., Dec. 31.—Three more locations will probably be announced for the Van Pool as soon as titles can be fully cleared on the tracts. The four producers in the Van Pool yielded a total of 19,215 bbls. in the three days of December 28, 29 and 30. The Jarman (discovery) well is the smallest producer of the four, its average running around 1,021 bbls. daily through a 2 $\frac{9}{16}$-inch choke while the other three are all on nine-sixteenths-inch choke, and yielding better than 1,700 and 1,850 bbls. daily. The Jarman well has only 30 pounds pressure while the Thompson No. 1 Tunnell have 390 pounds each and the No. 2 Tunnell 400 pounds.

NORTH LOUISIANA

SHREVEPORT, La., Dec. 31.—Olson Brothers' No. 1 Kneelan, in Section 27-8-12, a mile north of R. L. Gay's discovery well in the Zwolle district, made the first test since the Gay well was completed Saturday and with testing tool open 17 minutes got one joint of mud, no show of oil or gas, at 2,347 feet. Testing tool stuck and in trying to pull it loose they pulled in the derrick. As soon as it is rebuilt they will take another core. Since the day it came in, November 26, Gay's well has made approximately 90,000 bbls., of which 80,000 bbls. has been gauged and run, the remainder being lost before pits could be built.

Haynes Brothers, of Shreveport, have location for No. 1 Dover, SE cor. NE. and No. 1 White, SW cor. NE, Section 28-8-12, three-quarters of a mile northwest of Olson Brothers, and Tippett Drilling Co. has location for No. 1 Blackman in the NW cor. SW NW, Section 36-8-12, 1½ miles east of the Gay producer.

GULF COAST

HOUSTON, Tex., Dec. 31.—A quiet completion month for the Humble Field, Harris County, was closed with the bringing in of two good deep sand producers on the south side which added 5,600 bbls. flush flow to that field's daily production. Humble Oil & Refining Co.'s No. 9 Williams was completed estimated good for 4,000 bbls. daily on a quarter-

(Continued on Page 138)

High Spots in Field News

KANSAS

Only nine operations started, scattered over six counties.

NORTH TEXAS AND PANHANDLE

Percentage proration in Gray County, operators to curtail 20 or more per cent.

OKLAHOMA

New peak in Oklahoma City Pool, December 29, was 113,587 bbls.
Greater Seminole declines.

EAST CENTRAL TEXAS

Production of four wells in Van Pool for three days totaled 19,215 bbls., discovery well being smallest.

SOUTHWEST TEXAS

Magnolia gets 150-bbl. producer in Webb County. United North & South gets 1,500-bbl. well in Darst Creek.

CALIFORNIA

Curtailment program becomes little more effective with greater degree of permanence attained. Santa Fe Springs chief difficulty.

ROCKY MOUNTAIN AREA

Discovery well in Cooper area, Lea County, New Mexico, doubles output when deepened. Jal Pool has 500-bbl. completion. Gas show in Idaho.

NORTH LOUISIANA

Olson Brothers' test north of discovery well in Zwolle district, Sabine Parish, got one joint of mud and no show of oil or gas on 17-minute test at 2,347 feet.
Carterville district has 500-bbl. well.

GULF COAST

Yount Lee Oil Co. well, southeast of Jennings Pool, flows more than 700 bbls. from 7,447 feet, deepest producer on Gulf Coast.
Two good deep sand producers completed by Humble company on south side of Humble Pool added 5,600 bbls. production, one 4,000 bbls. and the other 1,600 bbls.

WEST TEXAS

Permian Basin production down. Andrews County test shut in but gas and oil appears increasing and water decreasing.
University regents receive protest on leasing terms.
Second test in Ector checking practically the same as discovery.
Irion County test being shot.
Taylor County well flows 67 bbls.
Shell corporation's well in Ward County flowed 320 bbls. fluid, 3 per cent water.
Deep Rock company's well in Andrews County has five 500-bbl. tanks full and a 10,000-bbl. tank is being erected.

MEXICO'S NEW PETROLEUM TAX

NEW YORK, Dec. 30.—Mexico's new petroleum tax law, which becomes effective early in 1930, provides a reduction of approximately 2 centavos per barrel under existing schedules. The existing petroleum production tax is based on a price of bunker oil in New York with $1.25 (American) per barrel used as a minimum basis. The new law reduces the quotation minimum on which the tax is based to $1 a barrel.

A new gasoline consumption tax law, also passed by the Mexican Chamber of Deputies, increases the existing gasoline tax, providing a tax of 4 centavos per liter on gasoline, payable when the gasoline leaves the refinery or when it enters the country, in the case of imported gasoline.

MRS. A. E. MILLER DIES

Mrs. A. E. Miller, mother of H. F. Miller of the Carter Oil Co., Tulsa, died December 28 at her home in Brooklyn, N. Y. Death followed an illness of pneumonia. Funeral services were held December 31 at Brooklyn.

A.P.I. WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to stills, gasoline stocks and gas and fuel oil stocks—for the week ending December 28 follows:

	(1)	(2)	(3)	(4)
East Coast	100.0	3,363,500	6,140,000	7,836,000
Appalachian	91.8	549,900	1,267,000	795,000
Indiana, Illinois, Kentucky	98.6	1,975,300	4,975,000	3,523,000
Oklahoma, Kansas, Missouri	88.6	2,018,300	3,538,000	3,401,000
Texas	90.7	3,678,700	6,692,000	14,135,000
Louisiana and Arkansas	97.1	1,274,000	1,978,000	4,848,000
Rocky Mountain	93.6	351,000	2,193,000	1,008,000
California	99.3	4,578,500	15,177,000	109,606,000
Total United States	95.5	17,789,200	41,960,000	145,152,000
Texas Gulf Coast	100.	2,948,100	5,646,000	11,153,000
Louisiana Gulf Coast	100.0	887,200	1,698,000	3,958,000

(1) Per cent refinery capacity represented. (2) Crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.

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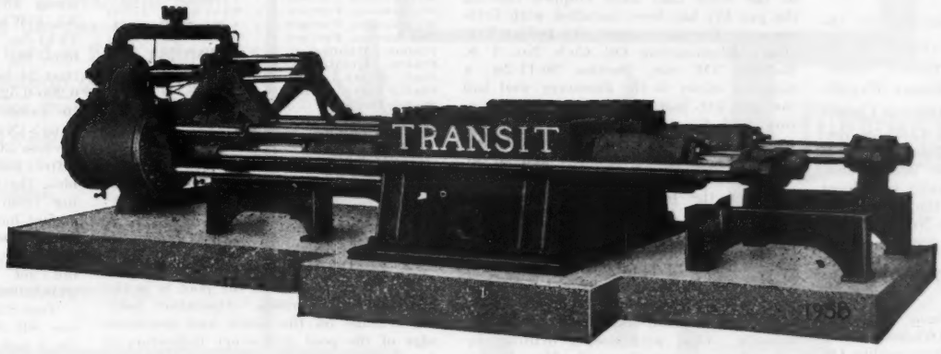

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Oklahoma City's New Production Peak

New Wells Run Output Up to 113,587 Bbls. in One Day. Enormous Production Still Shut In. Greater Seminole Declines

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

A new peak was recorded in the Oklahoma City Pool, December 29, when a total of 113,587 bbls. of oil was produced from 21 wells. The former record was 107,000 bbls.

The daily average production of the entire State for the week ending December 28, was in excess of 646,000 bbls. which is an increase of approximately 11,000 bbls. daily over the previous week. Operators in Oklahoma have kept well within the requirements of the market during the last three months. Curtailment of oil production by proration in the flush areas has been successful.

The new peak in production in the Oklahoma City Pool was caused by the opening of the Indian Territory Illuminating Oil Co.'s No. 1 Thomas Fuzzell, and the Wirt Franklin Petroleum Corp.'s No. 2 Lowery, in Section 12-11-3w, being drilled deeper. No. 1 Thomas Fuzzell in Section 13-11-3w, made 24,423 bbls. in 24 hours. It was originally completed as the largest producer in the field. Wirt Franklin Petroleum Corp.'s No. 2 Lowery in Section 12-11-3w, was deepened from 6,393 feet to 6,398 feet. The production increased from 11,821 bbls. to 14,560 bbls. in 24 hours.

Another big well has been completed in the north end of the Oklahoma City Pool. Indian Territory Illuminating Oil Co.'s No. 2 Jennings, SW cor. NE SE. Section 13-11-3w, blew in making 437 bbls. the first half hour. It blew in early December 30, from the Arbuckle lime at 6,010-6,524 feet.

Coline Oil Co.'s No. 3 Clauer, SE cor., Section 25-11-3w, cored a showing of oil and gas in sand at 6,481-90 feet. It will be drilled deeper.

Prairie Oil & Gas Co. and others' No. 1 Sudik, C NE NE, Section 8-10-2w, Cleveland County, was drilling at 7,690 feet on December 30.

Prairie Oil & Gas Co. and others' No. 1 Wilbur, NE cor. NW, Section 23-23-17w, Woodward County, had a showing of gas at 5,925-30 feet, through 4,500 feet feet of water. It was bailed down and the gas exhausted. It was drilled 1 foot deeper to a total depth of 5,931 feet and encountered what is estimated to be 5,000,000 feet of gas. It is shut down to move the boiler back and test. It is the first test in Woodward County to find gas in commercial quantities.

The combined initial production of the wells in the Oklahoma City Pool now shut in after producing 24 hours or less is 240,352 bbls. Three new wells were added to the list the last week. The initial production of the shut in wells was as follows:

Company, lease—	Wells	Bbls.
I. T. I. O., Trosper	2	19,722
Mid-Kansas, Browning	1	11,575
Coline, Olds	2	4,689
I. T. I. O., Emerson-Joyce	1	100
I. T. I. O., N. Emerson	1	875
Mid-Kansas, Fortson	4	3,242
Mid-Kansas, Fortson	5	6,256
Mid-Kansas, Mollman	1	1,476
Sinclair, School Land	1	6,687
I. T. I. O., Fortson Farley	2	42,584
I. T. I. O., Watters	2	1,420
Shell, Petty	5	65
Sinclair, Stamper	5	340
I. T. I. O., Trosper	3	8,620
Shell, Petty	4	700
Sinclair, Stamper	6	2,500
I. T. I. O., Verne	1	154
I. T. I. O., Verne	2	30,833
Skelly, Hoopes	1	32,037
I. T. I. O., Speegle	1	1,298
Coline, Warren	2	25,454
Slick, Zecherlie	1	*15,849
I. T. I. O., Peterson	1	‡1,027
I. T. I. O., E. Fortson	1	‡14,697
I. T. I. O., Wheeler	1	6,747
I. T. I. O., N. Emerson	2	*2,409
Total	26	241,352

*14 hours. †18 hours. ‡22 hours.

The holiday season slowed down developments in all the flush areas of the State. Development of the Oklahoma City Pool is now being directed toward the Detrital sand production, which has been found on three sides of the pool. It is now a matter of record that most of the wells producing from Arbuckle lime horizon are producing cut oil or making considerable water. Several of these producing wells have failed to flow. Many express the opinion that water encroachment is the underlying cause. In some of the wells that have stopped flowing the gas lift has been installed with little success. For an example, the Indian Territory Illuminating Oil Co.'s No. 1 S. Bodine, NW cor., Section 30-11-2w, a diagonal offset to the discovery well had the gas lift installed when it failed to flow and for two days last week, December 26 and 27, it made approximately 5,000 bbls. of water each day and no oil. The water encroachment applies to all parts of the pool where production is found in the Arbuckle lime. The Tom Slick Oil Co.'s No. 1 Glidden, SW cor. SE, Section 13-11-3w, failed to flow after being opened 24 hours, December 26.

The Detrital sand horizon has proved more reliable thus far. Wells producing from that horizon have held production steadily. One, with deeper drilling, increased its output almost double. It was the Wirt Franklin Petroleum Corp.'s No. 2 Lowery, in Section 12-11-3w, the most northerly producer in the pool. The well was drilled from the old total depth of 6,383 feet, to 6,393 feet. The production the day before it was deepened was 5,200 bbls. and on the day after it was 10,134 bbls.

Arbuckle Lime Wells

The wells producing from the Arbuckle lime had an initial production of 326,354 bbls. The following is a list of the Arbuckle lime wells, the depth, initial output, and the total recovery to November 27.

Company, farm—	Well No.	Depth	Bbls. Initial Prodn.
I. T. I. O., Trosper Park	1	6,160-6,504	8,600
I. T. I. O., M. Fuzzel	1	6,020-6,521	14,009
I. T. I. O., Bod. Anderson	1	6,150-6,499	5,195
I. T. I. O., A. Bodine	2	6,109-6,535	3,000
I. T. I. O., S. Bodine	1	6,162-6,600	4,300
I. T. I. O., S. Bodine	2	6,295-6,573	188
I. T. I. O., G. Button	1	6,165-6,542	5,700
I. T. I. O., G. Button	2	6,018-6,530	15,982
I. T. I. O., E. Joyce	1	6,151-6,664	675
I. T. I. O., Fee	1	6,195-6,607	5,700
I. T. I. O., K. Henning	1	6,205-6,561	5,600
I. T. I. O., T. Fuzzell	1	6,070-6,542	43,557
I. T. I. O., Trosper	1	6,290-6,564	8,600
I. T. I. O., Watters	1	6,338-6,625	2,578
I. T. I. O., N. Emerson	1	6,371-6,412	940
I. T. I. O., Fort'n-Farley	2	6,020-6,525	42,584
I. T. I. O., Verne	1	6,127-6,490	764
I. T. I. O., Verne	2	6,028-6,525	30,833
Mid-Kansas, Browning	1	6,058-6,522	10,800
Mid-Kansas, Fortson	1	6,210-6,589	4,560
Mid-Kansas, Fortson	2	6,190-6,542	6,775
Mid-Kansas, Fortson	3	6,184-6,554	17,166
Mid-Kansas, Fortson	4	6,188-6,571	3,242
Mid-Kansas, Fortson	5	6,200-6,562	6,252
Prairie, Hiddleston	1	6,040-6,433	4,170
Prairie, Hiddleston	3	6,034-6,503	6,695
Shell, Petty	1	6,080-6,500	8,760
Shell, Petty	2	6,113-6,746	1,000
Shell, Pet.y	4	6,160-6,592	1,218
Shell, Petty	5	6,240-6,504	95
Sinclair, Stamper	1	6,200-6,646	5,565
Sinclair, Stamper	2	6,370-6,420	800
Sinclair, Stamper	3	6,290-6,555	3,215
Sinclair, Stamper	5	6,215-6,650	340
Sinclair, Stamper	6	6,200-6,656	3,155
Slick, Glidden	1	6,230-6,535	16,158
Slick, Glidden	2	6,493-6,652	2,135
Total	38		326,354

Detrital Zone Wells

The main interest in the pool is in the Detrital sand horizon. Operators holding acreage on the south and southeast edge of the pool give every indication of developing production from the Detrital sand zone where it has been proven by other wells, before drilling any more Arbuckle lime tests. The wells completed in the Detrital sand zone have been maintaining production steadily. The following wells have been completed in the Detrital zone, which was opened by the Coline Oil Co.'s No. 1 Olds, June 27, 1929, seven months after the discovery well in the pool found its production.

Company, farm—	Wells	Depth	Initial
Coline, Olds	1	6,300-20	5,300
Coline, Olds	2	6,317-42	4,689
Coline, Olds	3	6,428-37	11,858
I. T. I. O., B. Johnson	1	6,330-80	17,000
I. T. I. O., Trosper	2	6,374-91	19,722
I. T. I. O., Peterson	1	6,384-6,401	1,025
Mid-Kansas, Mollman	1	6,382-6,401	1,476
J. Sheffer, Childs	1	6,330-44	7,550
Sinclair, Kinter	1	6,170-6,235	1,725
Sinclair, Kinter	2	6,305-55	7,565
Sinclair, School Land	1	6,394-6,420	6,683
W. Franklin, Lowery	2	6,360-83	6,465
I. T. I. O., Trosper	3	*6,243-58	8,627
Skelly, Hoopes	1	6,362-95	‡25,208
I. T. I. O., N. Emerson	2	†6,322-36	2,409
Total	15		112,002

*Total depth 6,475 feet. †Total depth 6,433 feet. ‡17 hours.

New Wells in Pool

Completion of wells in the Oklahoma City Pool the last week were delayed owing to the holiday season. Three wells were brought on production. Indian Territory Illuminating Oil Co. and others' No. 1 Wheeler, SW cor. NW SE Section 13-11-3w, was completed and made 312 bbls. the first hour and 6,747 bbls. the first 24 hours from the Arbuckle lime at 6,260-6,525 feet. The gas was estimated to gauge 30,000,000 feet. Same company's No. 2 N. Emerson, NW cor. SW Section 30-11-2w, was also completed the latter part of the week. It made 1,409 bbls. the first 14 hours. It was producing from the Detrital sand after the casing had been ripped at 6,322-30 feet. It had been drilled to a total depth of 6,433 feet. The well was bailed dry and did not flow. Gas was estimated at 30,000,000 feet.

Tom Slick Oil Co.'s No. 1 Glidden, SW cor. SE Section 13-11-3w, failed to flow for a full 24 hours and it was revived by agitating and swabbing. It made 455 bbls. the first hour and 6,071 bbls. in 18 hours.

The production of the Oklahoma City Pool on the gauge of December 28 was 86,365 bbls. from 23 wells.

Wirt Franklin Petroleum Corp.'s No. 2 Lowery, SE cor. NW NW Section 12-11-3w, which was recently deepened, made 11,820 bbls. of oil on the gauge of December 28. It had been making around 5,200 bbls. daily before it was deepened. Sinclair Oil & Gas Co.'s No. 2 Kinter, SW cor. SE Section 30-11-2w, was opened after the 30-day shut-in period and made 5,465 bbls. in 17 hours.

Skelly Oil Co.'s No. 1 Hoopes, NW cor. NE Section 31-11-2w, was opened Saturday, December 28, and made 6,829 bbls. in five hours, which completes its 24 hour's gauge. The well was opened on five different days for short periods and made a total of 32,037 bbls. for the full 24 hours, scattered over the five days.

A new location has been announced in the northern part of the field. It is the Mid-Texas Petroleum Co.'s No. 1 F. Hills, in the C N half SE SW Section 1-11-3w, in the Oklahoma City Pool.

Production of Leases

The average daily production for the Oklahoma City Pool for the week ending December 24 was 74,051 bbls. from 50 wells. The gauges by companies and leases were as follows:

Company and farm—	Wells	Bbls.
Coline:		
Olds	3	10,845
Warren	1	3,615
Cromwell:		
Trosper Park	1	2,456
I. T. I. O.:		
A. Bodine	1	2,126
S. Bodine	2	289
Button	2	11,487
E. Fortson	1	2,099
Foster	1	29
Fuzzell	1	4,180
Thomas Fuzzell	1	8,425
Johnson	1	913
Fee	1	65
S. Patterson	1	332
Speegle	1	51
Trosper	3	366
Verne	1	852
Williamson	1	52
Mid-Kansas:		
Fortson	5	4,227

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location— Remarks:

Smith Bros.' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w ..... Shut down 1,232 ft.

J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w .. Drlg. 4,660 ft.

BECKHAM COUNTY

Kay and others' No. 1 Martin, C E half E half NW Sec. 32-8-24w ..... Cleaning out 2,107 ft.

Producers Exploration Co.'s No. 1 Seidell, SE cor. SW SW Sec. 17-9-22w ..... Shut down 2,402 ft.

Carson and others' No. 1 Danby, SW cor. SE NE Sec. 20-8-22w ..... Shut down 1,575 ft.

BLAINE COUNTY

Lowen and others' No. 1 Unknown, NW cor. SW NW Sec. 27-16-11w ..... Spudded and shut down.

Washoma Oil Co. and others' No. 1 Phillips, C NW SW Sec. 12-19-10w ..... Shut down 2,935 ft.

CADDO COUNTY

Abernathy & Brown's No. 1 Horton, SE cor. Sec. 8-6-13w. Shut down 535 ft.

W. J. Hartley's No. 1 Galbreath, SE cor. NW SE Sec. 29-5-12w ..... Shut down 3,394 ft.

CLEVELAND COUNTY

Harris et al's No. 1 Highbee, SE NW Sec. 20-6-1 ..... Rig.

Daniels & LeWright's No. 1 Vandever, C SW Sec. 15-7-1w ..... Shut down 3,130 ft.

Phillips Pet. and T. B. Slick's No. 1 Sudick, NE cor. NE Sec. 8-10-2w ..... Drlg. 7,635 ft.

COAL COUNTY

W. E. McGraw's No. 1 King, C SW NE Sec. 11-1-3e .... Shut down 1,285 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec 3-3-9w ... Rig.

Green and others' No. 1 Wilson, C NE SW Sec. 14-1-12w.. Shut down 4,055 ft.

CREEK COUNTY

Carter Oil Co. et al's No. 1 Clinton, SW NW Sec. 12-15-9.. Total depth 3,412-15 ft.; water; abandoned.

GARFIELD COUNTY

Shell Petroleum Corp.'s No. 1 Loomis, C NW NW, Sec. 32-23-4w ..... Location.

Continental and Barnsdall's No. 1 Brown, CNL SW Sec. 10-20-4w ..... Drlg. 3,405 ft.

(Continued on Page 145)

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Company and farm—	Wells	Bbls.
Trosper	1	245
Prairie:		
Hiddleston	3	2,462
J. Shaffer:		
Childs	1	202
Shell:		
Petty	5	6,126
Sinclair:		
Stamper	5	1,737
Kinter	2	168
Slick:		
Glidden	2	3,792
Zeckerlie	1	2,252
Skelly:		
Hoopes	1	89
W. Franklin:		
Lowery	1	4,539
Total	50	74,051

In the Seminole Area

Seminole production for the week ending December 24 shows a decline of approximately 15,000 bbls. daily from the previous week's gauges. Most of the decline was in the Little River, Earlsboro and Sasakwa Pools. The two flush areas, East Little River and East Earlsboro, show declines, mostly due to proration.

A new pool may develop from the wells recently found south of the Little River Pool in Section 8-6-6, Seminole County. E. L. Harris' No. 2 Harjoche, NE cor. SE SE, Section 8-6-6, Seminole County, flowed 1,870 bbls. the first 24 hours from the Booch sand at 2,852-62 feet and made 1,372 bbls. flowing by heads on the gauge of December 28 at 7 a. m. Same operators' No. 1 Harjoche, SE cor. NE SE, Section 8-6-6, made 235 bbls. on the same day's gauge. It was the discovery well.

Empire Oil & Refining Co.'s No. 1 Sachemeche, SW cor. NW SW, Section 9-6-6, was the third well completed in the new pool south of the old Little River Pool, in Seminole County. It made 912 bbls. in 14 hours from the Booch sand at a total depth of 2,873 feet. The area is one of the most active in the Seminole district and has 14 other tests drilling and new locations are being made almost every day.

Prairie Oil & Gas Co.'s No. 3 Mingo, SE cor. SW NE, Section 25-6-6, southeast of the production in the above pool, has a hole full of sulphur water from the Wilcox sand at 4,307-20 feet.

East Earlsboro Pool declined about 700 bbls. from the previous week's gauges. Some of the recent tests have found water although the pool has a large potential oil production. Shell Petroleum Corp.'s No. 3 Hopper, NE cor. SE NE, Section 19-9-6, was completed as one of the largest producers in the pool. It made 6,734 bbls. flowing naturally. The well is making about as much as the seven other wells previously completed on the lease. Minnehoma Oil Co.'s No. 5 Noe, NW cor. SE SW, Section 17-9-6, had water in the Wilcox sand at a total depth of 4,245 feet. It will be plugged back and a production test made. The East Earlsboro Pool's 108 wells made 42,040 bbls. on the gauge of December 28. Magnolia Petroleum Co.'s No. 2 P. Anderson, SW cor. NE NE, Section 18-9-6, made 638 bbls. from the Wilcox sand at a total depth of 4,280 feet. Gypsy Oil Co.'s No. 11 Payne, SW cor. SE, Section 19-9-6, made 211 bbls. from the Wilcox sand at a total depth of 4,265 feet in 14 hours. Same company's No. 12 Payne, NW cor. SE SE, Section 19-9-6, swabbed 60 bbls. Sinclair Oil & Gas Co.'s No. 3 Nichols, NE cor. NW, Section 19-9-6, flowed 1,790 bbls. on the gas lift in 22 hours.

Earlsboro Pool had a daily average production of 30,662 bbls. from 297 wells ending December 24. It is a decline of about 4,000 bbls. daily from the previous week's gauges. The only development in the pool is in the townsite of Earlsboro, which has 24 wells drilling and two completed.

East Little River Pool, another important flush area in the Seminole district, shows a decline in production of 2,000 bbls. daily from the previous week's gauge. Prairie Oil & Gas Co. and others' No. 1 Yarhola, NE cor. NW NE Section 8-7-7, gauged 40,000,000 feet of gas after ripping the casing at 3,182 feet. It has been shut in. Gypsy Oil Co.'s No. 4 Watkins, SW cor. SE Section 5-7-7, had Cromwell sand at 3,218-88 feet, with a show of gas and was drilling deeper.

Little River's Sharp Drop

Little River Pool had the largest decline in production for the entire area from the previous week's gauges. It declined 5,000 bbls. a day. Amerada Petroleum Corp.'s No. 1 Brown, NW cor. SW NE Section 24-7-6, swabbed 47 bbls. of oil and 105 bbls. of water from Wilcox sand at a total depth of 4,184 feet. Empire Oil & Refining Co.'s No. 3 Charty, NE cor. SE NW Section 24-7-6, swabbed 300 bbls. in 14 hours after a shot of 30 quarts in the Wilcox sand at 4,159-84 feet.

Maud Pool declined 2,000 bbls. from the previous week. Gypsy Oil Co.'s No. 3 Gossland, NE cor. NW SW Section 9-8-5, flowed 620 bbls. from the Hunton lime at a total depth of 4,046 feet.

Gypsy Oil Co.'s No. 9 Barkus, NW cor. SW SW Section 6-8-6, in the Mission Pool, is the deepest active test in the Seminole area at this time. It was drilling at 5,670 feet in Arbuckle lime on December 28. It had 5,000 feet of water in the hole. A slight showing of oil was noticed at 5,631 feet in lime.

St. Louis Pool has declined about 700 bbls. from the previous week. The pool has a daily average production of 49,935 bbls. from 452 wells. The area surrounding the Wofford Drilling Co. and others' No. 1 McGee, NE cor. NW SE Section 4-7-4, in the northeast extension to St. Louis Pool, which well flowed 1,518 bbls. of oil from the Hunton lime at a total depth of 3,890 feet, is the most active in the St. Louis Pool. Magnolia Petroleum Co.'s No. 1 Jordan, SE cor. NW SE Section 12-7-4, was drilling in Viola lime at 4,142 feet. It flowed 142 bbls. from the Hunton lime. Independent Oil & Gas Co. and Mid-Kansas Oil & Gas Co.'s No. 1 Asher, NE cor. Section 3-7-4, was drilling in Hunton lime at 3,697-3,866 feet. It had a hole full of fluid.

Western Tests

The wildcat test of the Washoma Oil Co., Peerless Oil Producing Co. and Prairie Oil & Gas Co.'s No. 1 Wentz, NW cor. SW Section 22-22-1, Noble County, has been drilled deeper in the Layton sand at 3,282-3,300 feet. It flowed approximately 140 bbls. in 12 hours.

Another wildcat test in Noble County showing oil is the Magnolia Petroleum Co.'s No. 1 Young, NE cor. NW NW Section 22-21-2w. Casing has been cemented at 5,100 feet, the top of the Misener sand, where the test encountered a showing of oil several weeks ago. Drilling deeper has been delayed on account of the holidays. The total depth is 5,404 feet, in the Misener sand. It will be deepened and a production test made.

Champlin Refining Co.'s No. 1 Crab, NW cor. SE SW Section 36-28-3w, Grant County, found a hole full of water in the Wilcox sand at 4,765-70 feet. Gypsy Oil Co.'s No. 1 Bilderbeck, SE cor. Section 27-28-7w, a wildcat test in the northwestern part of the county, has cemented 8-inch casing at 5,081 feet, and is shut down.

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Section 14-26-24w, Harper County, the only test drilling in the county, has completed the fishing job for the rotary drill pipe which was lost in the hole at a total depth of 6,161 feet, and was drilling at 6,202 feet. J. W. Bailey and others' No. 1 Acre, SW cor. NE Section 14-24-11w, Alfalfa County, the only drilling operation in the county, was landing 8-inch casing at 4,680 feet. Considerable interest is being shown in the test during the last few months since it had a showing of gas in the Tonkawa series at 4,501 feet. Bu-Vi-Bar Petroleum Corp. and others' No. 1 fee, C SW SE Section 10-25-15w, Woods County, was drilling in lime at 6,052 feet. Sinclair Oil & Gas Co.'s No. 1 Stewart, NW cor. SW SW Section 33-27-16w, Woods County, was drilling at 5,835 feet. Peerless Oil & Gas Co.'s No. 1 Crowell, C NW NE Section 24-28-16, Woods County, was drilling at 2,030 feet. Prairie Oil & Gas Co.'s No. 1 Wilbur, NE cor. NW Section 23-23-17w, Woodward County, had a showing of gas at 5,925-30 feet. Harris & Haun's No. 1 Wyatt, C SE Section 9-23-20w, Woodward County, was fishing at 4,969 feet.

Skelly Oil Co. and Independent Oil & Gas Co.'s No. 1 Elrod, NE cor. SW Section 31-19-4w, Logan County, is plugging back to 6,067 feet. It made 250 bbls. of oil from the Wilcox sand at 6,055-70 feet, cutting 10 per cent.

Greater Seminole Production

Production of the important pools in the Greater Seminole area averaged 300,151 bbls. from 2,532 wells for the week ending December 24. Production of the first 11 pools in the list which comprise the Seminole area was 217,211 bbls. from 1,779 wells. The total production of the entire area shows a decline of approximately 15,000 bbls. daily from the previous week. The daily average gauges for the same week were as follows:

Pool—	Wells	Prod.
Little River	347	38,555
East Little River	53	23,417
Carr City	57	9,837
Maud	137	8,219
Mission	110	15,135
Bowlegs	294	23,289
Earlsboro	297	30,662
East Earlsboro	97	31,077
Seminole	273	24,475
East Seminole	29	4,486
Searight	85	8,059
Allen	238	21,238
Asher	26	3,549
St. Louis	452	49,935
Sasakwa	37	8,218
Total	2,532	300,151

Seminole Pipe Line

The daily average pipe line and tank car shipments from the Seminole Field were about the same as the previous week. The total shipments for the week ending December 24 were as follows:

Company—	Bbls.
Barnsdall	2,755
Champlin	4,128
Continental	670
Consolidated	721
Cosden	9,125
Empire	3,810
Gulf	36,470
Magnolia	9,980
Oklahoma	41,210
Prairie	36,305
Producers & Refiners	1,302
Pure	3,460
Shaffer	4,930
Shell	6,240
Sinclair	26,301
Texas	14,862
Tidal	15,980
White Oak	2,001
Total	220,250
Tank cars	9,400
Grand total	229,650

Carter County

Ven Mex Oil Co.'s No. 1 Pierce, SE cor. NW NE, Section 30-1s-3w, has been abandoned at 3,255 feet. Cotton Belt Oil Co.'s No. 10 Rexroat, NW cor. NE NW SW, Section 10-4s-2w, made 15 bbls. in sands 1,740-88 feet, total depth 2,005 feet.

Cotton County

Baldwin & Sultan and Wirt Franklin Petroleum Corp.'s No. 1 School, NW cor. SW SW SW, Section 36-1s-10w, is moving in tools. Shasta Oil Co. is moving the tools in for No. 1 Little Field, SE cor. NW, Section 31-1s-9w. Location has been made for No. 2 Whitehead, SW

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DEMAND FOR VAN ZANDT OIL FROM LOUISIANA AND ARKANSAS PLANTS

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FT. WORTH, Tex., Dec. 28.—Derricks are now up, and rigging up is in process on four more tests in the Van Pool, in Van Zandt County, to be developed under the unit plan—by the Pure Oil Co., but on Texas, Shell and Pure's acreage.

The Pure Oil Co. is rigging up its No. 1 A. F. Magers, located 250 feet from the east and 665 feet from the south line of a 72½-acre tract in the Nacogdoches County School Lands, about 1¼ miles north of the discovery on the Jarman farm. It is also rigging up a 6-acre tract belonging to R. A. Tunnell in the John Walling Survey, a little over half a mile southeast of the discovery. Another test belonging to this company is being rigged up on the R. L. Well's 41½-acre tract in the M. Gross, 1¼ miles west of the Jarman well.

One test to be drilled on Shell Petroleum Corp.'s acreage has a derrick standing. This is on the E. L. Fowler lands in the John Walling Survey, one-half mile east of the Van Pool.

These four tests will give the Van Pool a chance to expand in every direction except to the southwest, and as three more locations are to be announced immediately, one of them might embrace the area in that direction. With the completion of any one of the above four tests, and the completion of all of them as producers, a pipe line outlet to the Gulf Coast will be necessitated, and as the Pure Pipe Line Co., under the direction of W. M. Averill, of Beaumont, is making a survey of costs of construction of a line from Chandler to the Gulf Coast, such a line will probably be started as soon as any of these wells proves a commercial producer.

Demand for Van Zandt Crude

The Louisiana Oil and Refining Corp. is now taking 2,500 bbls. of crude daily from the Van Pool, and other refineries in Louisiana and in Arkansas may make later bids on crude from this new field, consequently a 10-inch line from the field to the Coast, and a loading rack at Chanler loading out several thousand barrels of crude daily, will be able to transport a considerable quantity of production from this new area.

Any wildcats which might be completed as discovery wells in Van Zandt or surrounding counties may have difficulty in obtaining pipe line connections and outlets, but they perhaps may find a ready sale to refineries operating east of there, especially in Louisiana and Arkansas, for some of those refineries have been paying freight on crude from West Texas, which helps to eat into the profits on their refined products, and if a better grade of crude, higher gravity and sweet oil can be obtained from East Central Texas, it will save those refineries much money by cutting down the cost of the long haul from West Texas. West Texas will probably come to feel the inroads that East Central Texas production will make upon contracts between refineries in Louisiana and Arkansas and the West Texas producers, for some of the operators who are now supplying these refineries may have to look for other buyers for their production. The Winkler Pools, of Winkler County, Texas, have always supplied a vast amount of oil to the refineries in Louisiana, and some in Arkansas, and possibly Winkler County will note the greatest difference in demand if the new area lately opened up, expands, and especially, if more wildcats bring in other pools in the surrounding territory. The unit plan of development in the immediate Van Pool will have a tendency to hold down drilling activities and overproduction in the pool, but no idea can be held as to what effect other pools in the district may have on the price structure of crude oil in Texas, especially West Texas and East Central and South Texas. North Texas and the Panhandle may not feel the effect of the strikes in this new district, for the crude in those two territories is sweet and of much higher gravity. Operators in those areas are now having troubles of their own in regard to curtailing drilling activities and overproduction.

Wildcat Operations

McElmurry and others' No. 1 J. W. Peel in the S. T. Meeks Survey, 8 miles southeast of Canton in Van Zandt County is now receiving material for the test, which will be of much interest as a wildcat testing an area several miles south-

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Quiet Week in the Fields of Kansas

Production Increased From New Wells of Previous Week. Only Nine Operations Started, Scattered Over Six Counties

By W. A. Spinney
Staff Correspondent, Kansas Fields

Production in Kansas in the last full week of 1929 reached the highest point it had been permitted to attain since the commencement of proration. The State averaged 113,000 bbls. a day in the week ending December 28, an increase of about 2,000 bbls. over the previous week. In the last full week of 1928 the State averaged only 98,145 bbls. per day. In August the daily average for the whole month reached 126,023 bbls. It could easily exceed that figure now if conditions in the industry warranted such a large production.

A wildcat test west of Augusta in Butler County had a showing of oil and a hole full of water in the Wilcox sand. The test was Darby Petroleum Corp. and Tidal Oil Co.'s No. 1 Abbott, in Section 4-28-3, Butler County. It had Wilcox sand at 3,073-3,134 feet, where a hole full of water was encountered. It is located south of the new production opened by the Aladdin Petroleum Corp. last summer.

New operations declined this week to a total of nine, divided into six counties, Cowley, McPherson, Sedgwick, each with two new operations and Butler, Greenwood and Sumner Counties with one each.

The deepest test in the State is located in Clark County, in the south central part, Watchorn Oil & Gas Co.'s No. 2 Morrison, in Section 20-32-21w, was drilling at 5,681 feet on December 28. It is prepared to be drilled to a depth of 7,000 feet in search of oil. It is located in an area where big gas wells have been found.

Showings in Dickinson

Two showings of oil were found in a Dickinson County wildcat test last week. A. H. Kruger and others' No. 1 Diche, C NW NE NE, Section 17-13-4, found oil in the chat at 2,125 feet, and a second showing at 2,225 feet, on top of the Mississippi lime. The owners consider the test to be running favorably on structure compared to another test drilled 3 miles west. It had the top of the chat at 2,240 feet, compared to 2,125 feet in this drilling test.

Another producer has been added to the Valley Center Pool in Sedgwick County. Continental Oil Co. and Gypsy Oil Co.'s No. 10 Wright, SW cor. SE NE, Section 12-26-1w, is estimated to be good for 500 bbls. from dolomite at 3,366-69 feet. It swabbed 238 bbls. the first 13 hours. Northwest of the Valley Center Pool, Rogers and others' No. 1 Updegraff, SE cor. SW SE, Section 26-25-1w, was shut down at 3,760 feet where a showing of oil was encountered. The owners may give it a production test before drilling deeper.

Chase County which has long been considered potential oil territory, but has not as yet yielded much production, has been active in spite of bad weather and seasonable decline in operations. Numerous wildcat tests are under way and other operations may be started after the first of the year. A new location has been staked in the northwestern part of the county by Urschel and others for No. 1 Lipps, SW cor., Section 27-18-6. The deepest drilling test in the county is E. W. Marland, Inc.'s No. 1 Altemus, SE cor. NE, Section 33-18-6, north of Strong City. It was drilling at 2,220 feet. Empire Oil & Refining Co.'s No. 1 Newman, SE cor. NE, Section 24-20-9, southwest of Emporia, was nearing the Bartlesville sand at 1,350 feet.

In the north extension to the Lygrisse Pool in eastern Sedgwick County hopes of extending the pool met with disappointment when the Dixie Oil Co.'s No. 1 Foulston, SW cor. NW, Section 11-26-2, found water in the chat at 2,885 feet. It is a half mile north of the Shell Petroleum Corp.'s No. 1 Erdwein, which is still making 1,000 bbls. daily. The Dixie Oil Co.'s test will be drilled deeper.

Big Gassers in Stevens County

The Trees Oil Co.'s No. 1 Grandy, C SW Section 3-35-38w, Stevens County, 11 miles south of Hugoton, the county seat, has encountered a large flow of gas. The gas sand was found at 2,618-75 feet, and the gas flow was estimated between 8,000,000 and 10,000,000 feet per day. It is 7 miles from the nearest gas production in the area. The discovery well drilled by the Argus Gas Co., its No. 1 Crawford, brought about the development of one of the largest natural gas fields in the State. The gas development now extends in all directions from Hugoton, with several wildcat tests drilling. With the gas in the Trees Oil Co.'s well the latest test to find gas in commercial quantities it has extended the gas production 14 miles in a north and south direction. These developments assure that part of the State an abundant supply of fuel. The Argus Gas Co. has a distribution system and is supplying Hugoton, Rolla, Moscow, Elkhart, Ensign, Cimarron, and Dodge City. By the first of the year the pipe line system will be supplying Meade, Fowler, Plains, Satanta, Sublett, Copeland, and Montezuma. The Argus Gas Co. has approximately 22,000 acres under lease in the area. The discovery well was completed a little over a year ago and since then six other wells have been completed.

Dixie Oil Co. and Amerada Petroleum Corp.'s No. 1 McCarty, SW cor., Section 22-25-17w, Edwards County, has a showing of gas at 2,313 feet. It is shallowest gas showing found to date in the county. The wildcat test is north and east of the British American Producing Co.'s well which was completed last spring for approximately 10,000,000 feet of gas and a showing of oil, at 4,543 feet. Offsetting the British American Producing Co.'s well the Barnsdall Oil Co.'s test in Section 26-21-17w, was drilling at 2,100 feet and Skelly Oil Co. test in the same section was drilling at 3,120 feet.

Continental Oil Co.'s No. 1 Moses, in Section 7-18-25w, Ness County, is the most western wildcat well in the State to date. It is being pumped once each week into storage tanks on the lease. It made 145 bbls. on the last day's gauge. The wildcat well has been pumped on Wednesday of each week for the last month.

Southbrook Oil Corp.'s No. 1 Joseph, a mile and half southwest of Potwin, Butler County, in Section 25-24-3, was slopping over and was estimated to be a 100-bbl. well. The oil was found at 2,685-95 feet, and is high gravity crude testing 45 degrees (corrected). It is the second attempt the company has made trying to locate an extension to the old production in the Potwin Field. Tankage is being erected and a production test made in a few days.

Other developments in the county are slowing down. Several drilling tests are nearing the pay horizons. National Oil's No. 2 Guinn, SW cor., SE NW Section 2-25-5, Butler County, was drilling at 2,492 feet, and was near the pay sand.

In Russell County, 3 miles northeast of the new well recently completed by the Prairie Oil & Gas Co. and Empire Oil & Refining Co., No. 1 Ochs, a new location has been announced by E. W. Marland, Inc. and Allison-Fitzwilliam Petroleum Corp. in the NE cor. NW, Section 8-15-14w. It will be a wildcat test on a core-drilled structure.

Oil in Dolomite

The discovery of oil in the Dolomite horizon in the north extension to the Lygrisse Pool, near Greenwich in Sedgwick County, is an important event in the area. This new pay horizon adds to the potentiality of the area north and east of the Greenwich townsite. The area south of the townsite has found production in the Simpson horizon and it has also been found to be productive in the townsite. The Gypsy Oil Co.'s No. 4, Hamant, NW cor. Section 14-26-2, missed the chat pay and found the Dolomite at 3,154-56 feet. It swabbed 352 bbls. the first 24 hours. The north offset to the Gypsy Oil Co.'s new well has been making around 1,000 bbls. daily from the chat pay.

A new extension to the Curry Pool west of Wichita was indicated when the Shell Petroleum Corp.'s No. 1 Southwestern College, in Section 2-27-1w, Sedgwick County, got a showing of oil at 2,703-10 feet. It was bailing 2 bbls. of oil an hour. The company planned to swab the showing and make a production test. It is the second showing of oil found in the well. The first showing was in the top of the Kansas City lime and was estimated to be at least 40 bbls. a day. The test has been running about 8 to 10 feet higher structurally than the discovery well drilled by the Plains Oil Co., which is producing from the Simpson and is making around 150 bbls. daily. Another well drilling on the west edge of Wichita is in Kansas City lime. It is C. B. Davis' No. 1 Van Arsdale, in Section 14-27-1w. It was drilling at 2,000 feet, and has missed all the water sands which other tests in the Curry Pool had. The sections are also thinning to such an extent that the test is regarded as a favorable prospect for extending the production in the area west of Wichita.

Shallow Tests in Elk County

Elk County is one of the active eastern counties, oil operators having turned to the shallow areas in the county. The Empire Oil & Refining Co.'s No. 1 Record, NW cor. NE SE Section 32-30-10, had a showing of oil at 1,270-97 feet and another oil showing at 1,515-30 feet, the total depth being 1,603 feet. Brenigan & Hunt's No. 1 Fergson, SW cor. SE Section 3-31-8, had the top of the lime at 1,854 feet. A showing of oil was found at 1,935 feet, and water at 1,936 feet. The hole was abandoned. Kemper & Torry's No. 1 Goss, NW cor. Section 10-31-10, was shot with 200 quarts at 2,054-90 feet, without results and is being drilled deeper at 2,100 feet. Minnehoma Oil Co. and others' No. 5 Benton, CWL SW Section 3-31-8, was drilling at 1,620 feet. Ramsey, Baker & Hunt's No. 1 Hunt, NW cor. NE NW Section 10-31-8, was drilling at 1,400 feet. W. K. Mann and others' No. 1 Hazlett, CSW SE Section 12-31-8, was drilling at 820 feet. Home Oil & Gas Co.'s No. 1 Lister, NW cor. Section 13-31-9, has spudded. Sharkey & Ames' No. 1 Dawson, C NW NW Section 22-31-10, was spudding. H. F. Fleming has staked a location for No. 1 Shrader, NW cor. Section 16-29-9.

Lyon County Activities

Lyon County developments included several new locations, areas ahead of production. F. A. Bailliers' No. 1 McKee, SW cor. NE Section 32-21-11, is rigging up. It is a half mile south of Empire Oil & Refining Co.'s No. 1 Staats, in the same section, which showed oil and was later abandoned. Same operator has two other locations, No. 1 Murphy, SE cor. SW Section 17-21-11, and No. 1 Buck, NW cor. Section 28-21-11. Bird, Hanley & Sheedy have made location for No. 1 Rees, SW cor. SE Section 16-20-10, Lyon County. The test is southwest of Emporia. Same operators' No. 5 Hughes, NW cor. SW SW Section 19-21-10, Lyon County, near the Chase County line, was drilling at 1,200 feet, and was nearing the Bartlesville sand. Richity & Moore's No. 5 Pixlee, in Section 34-21-10, was being made ready to spud.

In Sumner County the wildcat test of Slick, Pryor & Lockhart, No. 1 Peasel, NW cor. Section 33-31-1w, was drilled to a total depth of 3,658 feet. It swabbed and flowed 249 bbls. while deepening. The well has been pinched to 50 bbls. daily. Shell Petroleum Corp.'s No. 1 Armstrong, NE cor. Section 12-33-1, Sumner County, has a showing of oil at 3,745-70 feet, and a hole full of water at 3,781 feet. It was drilling deeper at 3,794 feet, and was 81 feet in the sand.

Western Gas Wells

O'Haver & Jones and Barnsdall Oil Co.'s No. 1 Gereke, C NE SW Section 7-26-14w, Pratt County, had 250,000 feet of gas in a break in the Brown lime at 3,270 feet. It had the top of the Brown lime at 3,212 feet. Owners estimated the wildcat test to be running favorable on

(Continued on Page 115)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

BARBER COUNTY

Company, farm and location—	Remarks:
Skelly Oil Co.'s No. 1 Temple Ranch, Sec. 13-34-15w	Shut down 4,463 ft.
Robertson et al's No. 1 Powell, SE cor. SE Sec. 11-32-10w	Total depth 3,650 ft.; 5,000,000 ft. gas; landing 8-in. csg.

BARTON COUNTY

Prairie's No. 1 Davidson, NW SE Sec. 4-16-11w	Rig on ground.
Allison & Fitzwilliams' No. 1 Brodie, NE cor. Sec. 19-16-12w	Drlg. 3,250 ft.
Slick et al's No. 1 Sweeney, SW NE Sec. 23-17-11w	Drlg. 2,410 ft.
Everett & Wiley's No. 1 Ward, NW cor. SW Sec. 12-20-13w	Shut down 3,948 ft.

BUTLER COUNTY

Shell Petroleum Corp.'s No. 1 Harper, SW NE, 35-26-3	Rig.
Lario O. & G. Co.'s No. 1 Hill, SW SE Sec. 1-27-4	Water 2,014-20 ft.; total depth 3,032 ft.; abandoned.
Lario O. & G. Co.'s No. 1 Miller, NE SE NE Sec. 36-26-3	Water 2,990-95 ft.; shut down.
Martin et al's No. 1 Flanigan, C SW SE SW Sec. 29-27-3	Drlg. 1,930 ft.
Stroub & Dutton's No. 1 Kirby, SE SW Sec. 12-28-3	Drlg. 2,270 ft.
Valley Osage's No. 1 Sirs, SE cor. Sec. 34-23-3	Shut down 2,600 ft.

CHASE COUNTY

Steinbuckel et al's No. 1 Stephenson, NE SW Sec. 4-20-6	Drlg. 400 ft.
Steinbuckel et al's No. 1 Cook, SE cor. Sec. 31-19-5	Drlg. 375 ft.
Empire's No. 1 Newman, SE NE Sec. 24-20-9	Drlg. 1,345 ft.
E. W. Marland, Inc.'s No. 1 Altemus, SE NE Sec. 33-18-6	Drlg. 2,200 ft.

CLAY COUNTY

Chrisler et al's No. 1 Tivier, SW cor. Sec. 19-8-3	Shut down 50 ft.

(Continued on Page 146)

THE WORLD'S MIGHTIEST BLOWS

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THE CHARGE OF A MADDENED BULL carries with it an impact oftentimes sufficient to hurl horse and rider clear out of the arena. The hurtling run, solid weight and powerful build of the bull are responsible for this reeling blow.

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GUIBERSON

BETTER BE SAFE THAN SORRY

Carterville District Has 500-Bbl. Well

Was an Old Gasser Deepened and Will Probably Increase Deepening Play. Two New Tests Begun in Zwolle District

By D. H. Bancroft
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Dec. 30.—Between a 14-inch snow and a big well in the Carterville district of Bossier Parish the new Zwolle district of Sabine Parish was in eclipse. Muslow Oil Co.'s No. 1 Peyton, Section 30-23-11, Bossier Parish, was completed flowing 72 bbls. the first 2 hours or 864 bbls. daily from 3,172 feet. Later it slowed down and is listed as a 500-bbl. producer of 44.1 gravity oil from 5 feet of sand. An old gasser deepened from 3,042 feet, it will probably cause quite a spurt in deepening other gassers whose production has fallen close to the vanishing point as well as in drilling new wells. It is the third and largest of these old wells to be deepened and finished as commercial producers, the first making 150 bbls., the second 32 bbls., and it is reported having topped the sand 20 feet higher than the others. When the first of the deepening programs was announced it was with the reservation that the plans were not to hasten matters but to deepen only as gas production failed, but now it is quite likely no time will be lost in killing the gas and proceeding with the second completions. The pool is served by a Standard pipe line from Sarepta and another smaller line of Louisiana Oil Refining Corp. to a loading rack on the Cotton Belt railroad about 6 miles west.

New Tests in Zwolle

Two new jobs were begun in the Zwolle district by A. H. Tarver; No. 2 Long-Bell in Section 18-8-13, in the west (Blue Lake) end of the field which he abandoned some time ago at 1,929 feet has been revamped and was coring at 1,940 feet; No. 1 Sabine State Bank is a new well in Section 27-8-12, 1 mile north of Gay's discovery well. Following the New Year's holiday a large number of wells are expected to be under way before the end of January and the same holds true for Carterville. Nell & Lanier's No. 1 Biedenharn in Section 20-19-13, a wildcat 8 miles north of Shreveport, in a locality where several others were drilled during the past 10 years and made encouraging shows but failed to produce commercially, was reported to have been standardized and to have pumped 30 bbls. the first 6 hours. In another similar locality between Pine Island and Dixie and east of both, in Bossier Parish, C. L. West has derrick up for No. 1 Sentell and Dickson in Section 3-20-13. Louisiana Gas & Fuel Co.'s No. 2 Murff in the Elm Grove gas district south of Shreveport gauged 7,200,000 feet of gas at 325 pounds from 879 feet. The Texas Company's No. 2 Sentell, Section 9-19-14, Dixie district, making 32 bbls. from 2,440 feet, was the only development of particular interest in Caddo Parish pools.

Sabine Oil & Gas Co.'s No. 1 Anderson, Section 19-8-12, 3 miles northwest of Gay's discovery well in Zowlle, which tested dry at 2,216 feet was shut down over the holiday but D. H. Riddick and others' wildcat half way between Zwolle and Pleasant Hill production, No. 1 Scretchfield, Section 18-9-12, made considerable gas show at 1,710 feet, but passed it up and was drilling at 2,930 feet.

Standard Oil Co. report on a laboratory test of Zwolle oil showed gasoline 5.75 per cent; heavy naphtha 3.87 per cent; kerosene 44.57 per cent; gas oil 27.26 per cent; paraffin distillate 19.2 per cent; acid oil 1.87 per cent; coke one-half of one per cent; loss .85 per cent; one-tenth of one per cent b. s.

R. L. Gay completed No. 1 Long-Bell, Section 26-8-14, Blue Lake area of Zwolle at 3,614 feet, abandoning it as a dry hole, with only a small show of oil and gas in the chalk rock at 1,852 feet which turned out dry after setting liner and bailing, and A. H. Tarver abandoned No. 1 Long-Bell in Section 29-8-13, as a salt water test at 3,629 feet. It had made a small gas show in 20 feet of broken sand at 3,429 feet and another at 3,535 feet. Tarver is associated with Shreveport-El Dorado Pipe Line Co. in his Sabine activities.

Monroe-Richland Areas

Four completions and a number of important tests were contributed by the Monroe and Richland gas areas, the latter not being particularly successful. Trousdale & Wright's No. 2 Kate Cole, Section 42-18-4, Ouachita Parish, made 1,500,000 feet of gas, total depth 2,226 feet. In Richland Parish Natural Gas Products Co.'s No. 1-C Sartor, Section 21-16-6, was abandoned when it blew out at 251 feet with gas from a nearby crater well, making the fourth or fifth that has been lost from this same cause.

Palmer Corp.'s No. 2 Earls, Section 31-17-6, made 5,800,000 feet of gas at 925 pounds from 2,470 feet and United Carbon Co.'s No. 1 Robards, Section 21-16-6, made 21,427,482 feet, total depth 2,453 feet. Palmer Corp. has stuck drill stem in No. 1 Eubanks, Section 26-17-6, a deep test in the northeast corner of proven area. It was drilled to 3,118 feet and tested salt water instead of the gas one previous deep well found, and plugged back to 2,171 feet to retest in the 2,400-foot horizon. Shreveport Contractors, Inc., also tested salt water at 2,527 feet, in No. 1 Buie, Section 17-15-7, a wildcat 4 miles southeast of nearest production, which also is scheduled for a deep hole. Triangle Drilling Co.'s No. 1 Crumpton, Section 16-17-7, 5 miles northeast of nearest production, also made a salt water test, at 2,310 feet and shut down for orders. Woodley Petroleum Co.'s wildcat, still farther northeast from the proven area, did likewise at 2,485 feet. The well is No. 1 Buie in Section 32-18-7, and is between 3 and 4 miles north of the Triangle well.

Three more completions for the Monroe area came from Union Parish. Interstate Natural Gas Co.'s No. 24 Fee, Section 17-20-4, with 4,569,000 feet at 1,020 pounds, total depth 2,170 feet; No. 24 Fee, same section, with 4,060,000 feet at the same rock pressure, total depth 2,184 feet and No. 22 Fee, same section, 9,277,000 feet at 710 pounds, total depth 2,139 feet.

Palmer Corp.'s No. 2 Miller, Section 28-21-10, Cotton Valley district of Webster Parish, made 31,196,000 feet of gas from the deep stuff at 4,690 pounds and Paul C. Warren and others' wildcat, 8 miles north of Minden and about the same distance south of Cotton Valley production, has a gas show in the top of the Nacatoch at 1,759 feet.

South Arkansas Tests

Three south Arkansas wildcats went by the board. J. G. Marcum's No. 1 McGarry in Section 10-19-4, Ashley County was dry at 3,304 feet, his second operation in that vicinity, the first having been drilled during the red bed play last year. Pure Oil Co.'s No. 1 A. A. Wilson, Section 26-15-18, west of production in the Mount Holly district of Ouachita County, also was dry at the same depth. Federal Petroleum Co.'s No. 1 Union Sawmill in Section 5-17-12, Union County, 6 miles east of Champagnolle production, was dry and abandoned at 3,340 feet. Modisette and others' No. 1 Union Sawmill Co. in Section 14-18-14, in the Urbana district of Union, is still waiting on standard rig with 1,800 feet of fluid, 10 per cent water, in the hole, from 2,235 feet. If it makes a commercial well it will be the first of about a dozen wells that have been drilled in that vicinity during the last 6 or 8 years. Several looked like producers and one or two actually were, but they were short lived and were soon drilled out, just as the large pressure gas wells in the same territory were during the winter of 1926-27.

J. E. Crosbie's No. 8 Roberson, Section 25-15-16, Ouachita County, Smackover, pumped 25 bbls., total depth 2,052

(Continued on Page 115)

LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

BOSSIER PARISH—BELLEVUE

Company, farm and location—	Remarks—
H. L. Morgan's No. 2 Wetherbee, 3,811 ft. E, 200 ft. S. NW cor., Sec. 28-19-11	Tested sulphur wtr. 2,317-20 ft; coring 2,367 ft.

BOSSIER PARISH—CARTERVILLE

Goodman-Johnson's No. 1 Martin, 330 ft. S, 330 ft. E. NW cor. SE, Sec. 26-23-12	Cmtd. 6⅝ in. 3,148 ft.; T.D. S.L.M. 3,175 ft.
La. Pet. Corp.'s No. 2 J. W. Peyton, 1,170 ft. S. 150 ft. W. NE cor. SE. Sec. 25-23-12	Location.
Palmer Corp.'s No. 4 Roberson, 660 ft. S. 660 ft. E. NW cor. NW NE, Sec. 26-23-12	Tstd. dry; 4 ft. sand 3,100 ft. esg. 3,104 ft.
Magnolia Pet. Co.'s No. 1 M. A. Rogers, 660 ft. S. 660 ft. W. NE cor. NE SE, Sec. 21-23-12	D.S. tes. 3,217 ft.; 4 joints fluid, W.O.
Magnolia Pet. Co.'s No. 1 Robertson, 412 ft. S. 660 ft. E. NW cor. SW NE, Sec. 26-23-12	O.W.D.D; rigging up to deepen; 3,058 ft.
Muslow Oil Co.'s No. 1 Barnett, 1,320 ft. W, 660 ft. N, SE cor., Sec. 25-23-12	Cmtd. 6-in. 3,140 ft; 3-ft. sand 3,143 ft.
Muslow Oil Co.'s No. 1 Kilgore, 2,080 ft. N. 1,980 ft. E. SW cor., Sec. 31-23-11	O.W.D.D; arranging to deepen; T.D. 3,078 ft.
Muslow Oil Co.'s No. 1 Mark Myer, 1,980 f.. N, 330 ft. W, SE cor., Sec. 36-23-12	O.W.D.D; arranging to deepen; T.D. 3,088 ft.
Northwest La. Gas Co.'s No. 5 Bollinger, 252 ft. E. 200 ft. S. NW cor. Lot 7, Sec. 31, in Sec. 33-23-11	Rigging up.
Nat. Gas Prod. Co.'s No. 1 U. S. Govt., 660 ft. N, 660 ft. W. C. Sec. 21-23-11	Recmtd. 4½ in. 3,139 ft.
Sales & Walker's No. 4 Bollinger, 896 ft. S, 1,120 ft. E NW cor. SW, Sec. 30-23-11	O.W.D.D.; arranging to deepen; T. W.D.
R. G. Smitherman, trustee's No. 1 Kilgore, 1,310 ft. E. 675 ft. S, NW cor., Sec. 31-23-11	Washing to bottom; T.D. 3,062 ft.
The Texas Co.'s No. 3 Hy. Rose Merch. Co., 4,126 ft. E. 1,520 ft. S, NW cor., Sec. 31-23-11	Began drlg. Dec. 22; drlg. 150 ft.

BOSSIER PARISH—ELM GROVE

La. Gas & Fuel Co.'s No. 4 Thigpen & Herold, 660 ft. N, 660 ft. W, SE cor., Sec. 12-17-12	Cemt. 6-in. 1710 ft.

CADDO PARISH—GREENWOOD

Calatex O. & G. Co.'s No. 1-A Agurs, 819 ft. S, 157 ft. E. NW cor. SW, Sec. 7-16-16	Cmtd. 6⅝-in. 2,800 ft; to test show gas.

(Continued on Page 86)

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

NORTH LOUISIANA

BOSSIER PARISH

Company, farm and location—	Remarks—
Corbett et als' No. 1 Murff, SE cor. NE. Sec. 18-17-11	S.D. 990 ft.
Simon Goldman's No. 1 McFarlin, SE cor. SW. Sec. 7-19-13	Tested S.W.; show oil 1,000 ft. S.D.
Nell & Lanier's No. 1 Biedenharn, SE cor., Sec. 23-21-14	W.O.S.R.; 980 ft. oil in hole; T.D. 998 ft.; arranging to re-test at 998 ft.
S. P. Lanier's No. 1 Le Rosen, 300 ft. S., 1,600 ft. W. NE cor. Sec. 26-21-14	Derrick.
G. D. Nesbit's No. 1 Leonard, 1,900 ft. N, 957 ft. E. SW cor. Sec. 20-19-13	D.S. test 2,547 ft; showed oil and gas; drlg. red shale 2,568 ft S.D. Repairing rig 2,578 ft.
Old River Oil Corp.'s No. 1 Byrd, 300 ft. E. 300 ft. S. NW cor., Sec. 14-19-14, formerly carried in Dixie district of Caddo Parish	Setting 2 in. tubing. Est. 100 bbl. pumper 4 ft. sand. S.D. 2,472 ft.
Walker et als' No. 1 Antrim, NW cor. SE. Sec. 28-22-13	Tested dry; W.O. 3,184 ft.
C. L. West and others' No. 1 Sen oil & Dickson, 2,310 ft. W, 895 ft. N, SE cor. Sec. 3-20-13	Derrick.
Woodmansee et als' No. 1 Bollinger, SE cor. NE. Sec. 9-22-11	Dry and abd. 3,522 ft.

CADDO PARISH

R. W. Norton's No. 1 Hill, 630 ft. N. 1,260 ft. W, SE cor. NE. Sec. 33-23-16	Esg. core bbl. 4,403 ft.
I. N. Pharisa, trustee's No. 1 Oden, NE cor. SE NE. Sec. 16-19-14	S.D. 2,322 ft.; topped sand at 2,396 ft.; set 6⅝-in.; T.D. 2,400 ft.
Old River Oil Co.'s No. 1 Sibley, 300 f.. E. 300 ft. S. NW cor. SE. Sec. 15-19-14	O.W.D.D; formerly reported Old River's No. 1 Pittman; arranging set liner and swabbed. S.D. Water line froze 2,494 ft.
Woodley Pet. Co.'s No. 5-A Knight, 26,185 ft. E. 660 ft. N. SW cor. Township 16-12	Location.

CATAHOULA PARISH

Lochnager Pet. Co.'s No. 1 Taliaferro, 572 ft. E. 396 ft. S. C. Sec. 26-9-6	S.D. 900 ft.

CLAIBORNE PARISH

El Dorado Chief Oil Co.'s No. 1 Dance, C SW NE, Sec. 27-20-7	S.D. 2,240 ft.
Leue Oil Co.'s No. 1 Taylor, Sec. 16-22-6	Derrick.

(Continued on Page 91)

Well Four Miles North of Cole Pool

Magnolia Gets 150-Bbl. Producer in Webb County. United North & South Gets 1,500-Bbl. Well in Darst Creek

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Dec. 30.—Magnolia Petroleum Co.'s No. C-2 Benavides 4 miles north of nearest oil production in the Cole pool in Webb County is a 150-bbl. oil well at 2,335 feet. The Magnolia has a gas well in the same sand 1 mile north and 1 mile east and has a gas well a half mile south in the same sand. There are about a dozen other gas wells in the same sand scattered between No. C-2 Benavides and the nearest oil production which is about 4 miles south and one and a half west.

Cole Petroleum Co. discovered oil in the eastern part of Survey 412 and an oil pool developed covering the southeast part of Survey 753 and the southwest part of Survey 754 and gas production was developed in the northern part of these surveys, extending north and east a distance of 5 miles.

The Cole gas pool 4 miles east of the Cole oil pool and in Duval County was discovered by the Cole Petroleum Co. some years before the oil pool was discovered. The company owns a tract of leases covering both fields and the acreage between with gas and oil possibilities only partly tested and developed. North and east of these is the Kohler Field producing both gas and oil and showing a typical situation for the Laredo district which is showing a close network of production. The Cole gas field in Duval and the Humble's Kohler Field in Duval will probably eventually be merged with production at around 1,780 feet.

Laredo Completions

Of four completions in the Laredo territory the past week three were by the Magnolia Petroleum Co., which completed No. 1 F. Benavides, three quarters of a mile south of its No. C-2 Benavides which came in at about the same depth for 25,000,000 feet of gas and its No. 4 F. G. Martinez in Zapata County which came in for 25,000,000 feet of gas at 1,887 feet in Survey No. 4 near the company's No. 1 which opened a new gas pool in that county.

The fourth completion for the Laredo district was the Allied Gas Co.'s No. 3 Dinn in the territory north of the Cole gas field and south of the Kohler gas field in Duval County.

Wildcat features of the Laredo territory are the gas showing in Harry L. Fansler's No. 1 Cuellar in Zapata County at 1,668 feet in Survey 285 in unproven territory near the Jennings gas field, and John Poppas' No. 2 Cuellar near the town of Zapata on the Rio Grande has a showing of oil at 1,850 feet. No. 1 Cuellar was a gas well at less depth.

Darst Creek Field

Bitter cold weather and several inches of snow on the ground, along with the Christmas season, slowed operations down all over Southwest Texas and as a result completions in the proven fields were few. The map changed but little in the Darst Creek Field, Guadalupe County. Humble Oil & Refining Co. was completing No. 1 Denman late in the week and it ran 35 feet higher than the discovery well and looked like a big well.

Turman Oil Co.'s No. 1 Dowdy, Empire Gas & Fuel Co.'s No. 1 Dowdy and Humble Oil & Refining Co.'s No. 1 Baker, offsets in the southwest end of the field, are in the pay at right depth and have set casing. They will extend the field a quarter mile southwest. Kirby Petroleum Co.'s No. 1 Rand Miller came in at 2,625 feet for 150 barrels.

United North & South Development Co. completed No. 1 Dix, one of the biggest wells in the field, flowing at the rate of 1,500 bbls. a day. This is the first oil well completed by this company since it sold its production in the old Luling Field to the Magnolia Petroleum Co. a few years ago, and it puts the company back into the field with production to dispose of.

Pettus Territory

Spots exciting interest at this time are the Pettus territory in Bee County and the Lasater territory in Brooks. In the Pettus territory the Humble Oil & Refining Co. has taken over the No. 1 J. J. McKinney drilled by the Houston Oil Co. This fixes the test as an oil well. Casing is being set. The Houston Oil Co. secured the gas lease on the acreage from the Humble Oil & Refining Co., the Humble retaining the oil lease and its taking over the well is on the supposition that it is an oil well though it made a lot of gas. The well is one and a half miles south of the discovery Pettus gas well, producing at about 2,900 feet. No. 1 McKinney is in sand at 3,957-63, instead of 3,857-63 as first reported, and the oil is 51 gravity. Three and a half miles east of it Union Producing Co.'s (Mission Drilling Co.) No. 3 Ray has been completed for 25 to 30 bbls. of oil, flowing, at 4,060 feet. It heads two or three times every 24 hours. When closed in it builds up a pressure of 1,600 pounds which is soon spent after it is opened. The oil is 47 gravity. After allowing for surface elevation No. 3 Ray is still somewhat deeper than No. 1 McKinney, but it is due east of No. 1 McKinney and the trend of fields is somewhat to the northeast and southwest. Hence it is probably down the dip and an edge well. The gravity of the oil being so nearly the same it begins to look like there was an oil pool there and these wells may be producing from the same sand. However, No. 3 Ray penetrated other sands at around the same depth and on deeper. It was drilled to 6,060 feet and plugged back to 4,060 feet and found many sands with more or less oil and gas which speaks well for the possibilities of the pool farther to the north and northwest.

Goliad County

Seven miles northeast of No. 1 McKinney is F. P. Zoch's No. 1 Kaufman in Goliad County, a 40,000,000-foot gas well in sand at 4,216-32 feet with a rock pressure of 1,600 pounds. The Union Producing Co.'s No. 3 Ray is a little southeast of a straight line from No. 1 McKinney to No. 1 Kaufman and the Union Producing Co. has moved a little northwest for the location of its No. 5 Ray which is nearly on a direct line between No. 1 McKinney and No. 1 Kaufman. The depths of these wells is so nearly the same it is causing great interest as to the size of the structure in that territory and as to just what will develop from the drilling under way. There has been no positive correlation of the sands thus far.

These wells and the Raccoon Bend Field in Austin County with a stretch of 120 miles between them and located with similar geological conditions, is causing interest in this bench of the coastal plain. Along that line Humble Oil & Refining Co. is core drilling a big block in northern Goliad, Zoch has a location in southeastern DeWitt and adjoining his block the Penn Oil Co. has a block and near Myersville in DeWitt the Shell Petroleum Corp. has a block and Cranfill & Reynolds and McElreat & Suggett have blocks in Lavaca and Colorado Counties. It is an interesting line of development and becoming more interesting every day.

Brooks County Territory

In the Lasater area, Brooks County, where the Houston Oil Co. completed a gas well on Shell acreage, the industry is waiting the outcome of the second test, No. 1 Wormser-Holbien, 600 feet south of No. 1 Lasater. Gas in No. 1 Lasater, the discovery well drilled by the Houston Oil Co., at first was not so wet. Now it is classed as very wet and the Houston Oil Co. which has made two lucky strikes, both late in the year, may have the further misfortune to have this one turn into an oil well in which case it will be taken over by the Shell Petroleum Corp. No. 1 Wormser-Holbien found a sand at 3,807-14 feet containing some gas and is now testing another at 4,000 feet before deepening to the sand producing in No. 1 Lasater at 4,110 feet.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Alexander Boynton's No. 1 Fee, in the John Sharp Sur., 3,645 varas E W line, 2,070 varas S N line of Sur., SW end of Somerset Field ..... T. D. 2,230 ft. in Austin chalk.

BASTROP COUNTY

Johnson Brothers' No. 1 W. C. Bryan, Stidham Sur., 5 miles W from Red Rock ..... T. D. 2,466 ft. in Edwards lime; abandoned dry.

B. L. Batts et al's No. 1 A. A. Alexander, W. M. Eastland Sur., 4,190 ft. to NW line, 1,320 ft. to SW line of Sur. ..... Shut down 1,325 ft.

Humble Oil & Ref. Co.'s No. 1 William Singer, Sec. 312, Alcorn Sur., 2,500 ft. to N line, 330 ft. to E line of Sec. ..... Location.

Abernathy et al's No. 1 A. Aldridge, in the Martha Barker Sur., 2,750 ft. SE and 450 ft. NE of 241-ac. tract or 2,000 ft. SW and 4,500 ft. NW of Sur. ..... Drlg. 1,575 ft. in shale.

Superior Oil Co.'s No. 1 A. Lasher, D. Dykes Sur., 600 ft. to S and W lines of Sur. ..... Location.

BEE COUNTY

Houston Oil Co.'s No. 1 McKinney, L. C. Randolph Sur. ..... T. D. 3,971 ft.; rock at 3,955-57 ft.; sand at 3,957 ft.; oil show; drill stem test showed strong flow; 8½-in. csg. to be set.

The Texas Company's No. 2 Tipps ..... T. D. 420 ft.; standing.

The Texas Company's No. 3 Tipps ..... Drlg. in sand and shale 1,000 ft.

BEXAR COUNTY

Burton Oil Co.'s No. 1 P. H. Shook, in Monjares Sur., 3,150 ft. to E line, 150 ft. to N line of farm, 10 miles SE from San Antonio ..... Derrick.

F. H. Eckert's No. 1 Sandemer, Sur. 52 ..... Drlg. 615 ft.

Penn-Tex Oil Co.'s No. 1 Kate May, F. R. Desauge Sur. No. 134 ..... T. D. 2,080 ft.; temp. shut down.

Ross E. Fenton Co.'s No. 1 Clarence V. Uhl, 100 ft. to S and W lines, 6 miles SE from San Antonio ..... Laying a water line.

Moore-Jauer's No. 1 Holly R. Ellison ..... Drlg. in Travis Peak lime 1,810 ft.

E. G. Potter's No. 1 Watson, B. Martinez Sur. ..... Made head and bridged; standing; T. D. 2,509 ft.

BLANCO COUNTY

Ashe & Marshall's No. 1, 5 miles S Johnson City ..... Shut down 85 ft.

BROOKS COUNTY

Amos Dinn, trustee's No. 3 Garcia-Ramosi, Share B-1, Las Mestenas y Gonzales grant, 1,300 ft. S. line, 2,325 ft. W line of share B-1 ..... T. D. 1,500 ft.; drlg.

Milam Drilling Co.'s (No. 5 core test) (No. 10 deep test) Jerry Reiley, San Antonio grant, SW Brooks County ..... T. D. 3,000 ft.; dry and abandoned.

Humble Oil & Ref. Co. and Shell Petroleum Corp.'s No. 1 Singer, Alta Verde Subd., 2,500 ft. S of N line, 333 ft. W of E line of Sec. 312 ..... Will spud in.

CALDWELL COUNTY

J. Harper et al's No. 1 Crenshaw, in the J. Burleson Sur., 600 ft. NE and 320 ft. NW of farm ..... Location.

Stone et al's No. 2 Robert Guinn, Joseph Burleson Sur., 150 ft. to NE and NW lines of 225-ac farm ..... Drlg. 2,140 ft. in Del Rio.

Keen & Malcolm's No. 1 Mollie McNeal, George C. Kimball Sur., 2,500 ft. to W line, 860 ft. to N line, 1 mile S from old Luling Field ..... Drlg. 890 ft.

San Antonio Petroleum Corp.'s No. 1 Gustave Walkerhagen, Thomas Maxwell Sur., 150 ft. to NW and SW lines, 11 miles W from Lockhart ..... Stdg. in Edwards at 1,136 ft.

W. H. Harper's No. 3 Thomas, J. Roberts Sur. ..... Fishing for pipe.

G. R. McIntire's No. 1 J. B. Towns, in Isaac Weldon Sur., 4,900 ft. to NE line, 1,350 ft. to SE line of survey ..... T. D. 2,630 ft.; stdg.; dropped from reports till work is resumed.

DE WITT COUNTY

Gibson & McIntyre's No. 1 William Van Roeder ..... T. D. 1,480 ft.; drlg. in gumbo and lime.

(Continued on Page 109)

SOUTHWEST TEXAS

Branyon	26
Bruner	28,770
Dale	423
Darst Creek	2,064
Kingsville	204
Larremore	43
Luling	9,150
Lytton Springs	915
McMullen County	32
Medina	21
Mirando	9,929
Somerset	1,736
Yoast	1,085
Total	54,398
Week ending December 21	56,544
Decrease	2,146

COMPLETIONS

Darst Creek—Guadalupe County

Kirby Petroleum Co.'s No. 1 Rand Miller in the Jerome B. Alexander Survey, 3,450 feet W line, 150 feet to N line of survey, total depth 2,624 feet, 150 bbls.

Magnolia Petroleum Co.'s No. 2 Thomas Dix in the Joel R. Robinson Survey, offset to United North & South Development Co.'s No. 1 Dix, 150 feet to NW line of lease, 1,000 feet to NE line of lease, total depth 2,587 feet, estimated 600 bbls. by swabbing.

United North & South Development Co.'s No. 1 Thomas Dix, Joel R. Robinson Survey, 150 feet to SE and SW lines of lease, total depth 2,597 feet, 1,100 bbls.

Magnolia Petroleum Co.'s No. 1 Thomas Dix, Joel R. Robinson Survey, 150 feet to SE line of lease, 150 feet NE of corner of Alexander Survey, total depth 2,620 feet, flowed 440 bbls. in 24 hours.

Cole Pool—Webb County

O. W. Killam's No. 15 Bruni, Survey 6, Mariano Arispe Grant, 150 feet SW line, 150 feet SE line of Survey 6, 40,000,000 feet of gas at 2,278 feet.

(Continued on Page 112)

Meeting your Requirements means meeting *you*, too—

THE valve demands of your particular part of the oil industry are the valve demands of your business. They are the demands of your plants and hence the demands of *you*. So, in meeting the needs of your plant, O. I. C. Valves meet you, *personally*.

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THE OHIO INJECTOR COMPANY
WADSWORTH, OHIO.

This particular valve is No. 329, Extra Heavy Wedge Gate type, with outside screw and yoke rising stem. It is built in all standard iron pipe sizes from 1¼ in. to 16 in. This O. I. C. Valve should be specified on lines carrying up to 250 lbs. saturated steam pressure; or super-heated steam with a maximum temperature of 500 degrees. This valve is tested to 800 lbs. hydraulic pressure.

Extra Heavy Wedge Gate Valves

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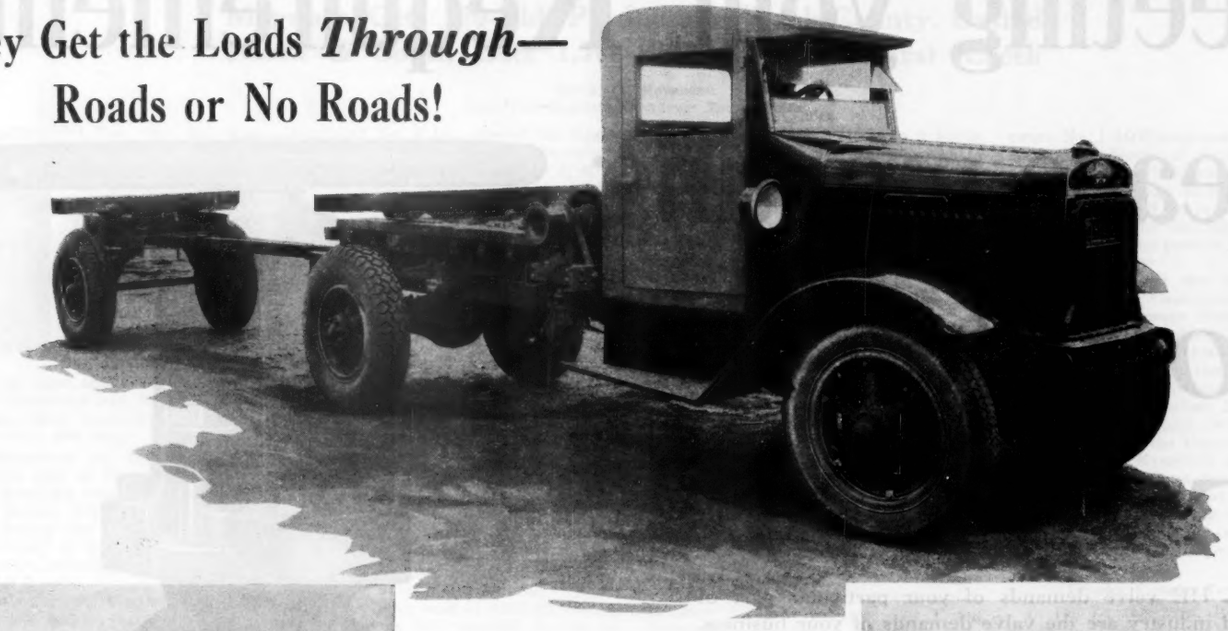
They Get the Loads *Through*— Roads or No Roads!



C. M. Jeffries Borger, Tex., owns the International Truck above. The scene to the left shows the loading of a cable drum on an International HS-74, operated by the Exchange Drilling Co., Seminole, Okla. Joseph D. Hughes, trucking contractor at Houston, Tex., finds Internationals dependable for hauling loads like the one at the right.

McCormick-Deering Industrial Tractors are used widely in the oil fields wherever mobile power is needed. They combine with a variety of equipment to handle many jobs that formerly required large crews of men. They work faster than manpower could and at a much lower cost. The McCormick-Deering tractor shown below is owned by Peter Brown of Oklahoma City. It is drilling a water well—one of the belt jobs it does easily.

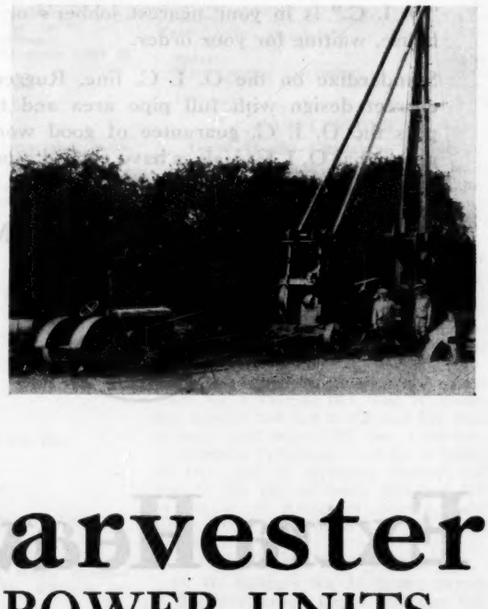
S. S. Gibson of Seminole, Okla., is one of the trucking contractors in the Seminole field who likes Internationals. He has seven of these trucks.

If you've ever frogged a big boiler or a mud hog through bottomless oil-country roads you know what it means to have the right kind of a truck under you. You know it's no job for a weakling. It demands the kind of power and strength that has made International the most popular full line of trucks in the oil fields.

There are many hundreds of Internationals in this business. They are getting rotary rigs, cable rigs, line pipe, supplies, and what-not to and from location. They are showing fleet owners real economy in motor truck transportation. They're on the job day in and day out, because they are engineered and built to stand the gaff.

Service in a hurry is always available because our Company-owned branches, scattered through the oil country, carry large stocks of parts and have mechanics who "know their stuff."

Pick out the worst going you know of and ask the nearest International Harvester branch for a demonstration. When you drive one of these trucks you will begin to see why there are so many Internationals in the oil business.



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TRACTORS — TRUCKS — POWER UNITS

New Deepest Producer on Gulf Coast

Yount Lee Co. Well, Southeast of Jennings Pool, Flowing More Than 700 Bbls. From 7,447 Feet. Lower Gravity Than Earlier Well

By Nell Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Dec. 30.—Yount Lee Oil Co.'s No. 7 Houssierre-Latrielle, southeast of the old Jennings Field of Acadia Parish, Louisiana, the past week became the Gulf Coast's deepest producer. From a sand at a total depth of 7,447 feet, this well was bailed in last Friday and over the week-end was flowing by heads through 2½-inch tubing at the rate of 700 bbls. of pipe line oil daily. This well takes the deep production record from the same company's No. 6 Houssierre-Latrielle, which was completed last June flowing 2,500 bbls. daily on chokes from a sand at a total depth of 7,288 feet.

The two deepest producers are approximately 700 feet apart, No. 7 being 342 feet east and 412 feet north of No. 6, but despite their proximity they are producing two different grades of oil. In No. 6 the oil was higher gravity, checking 35.8 degrees while in No. 7 the oil is 23.9 gravity. The comparatively low gravity of the latter oil is somewhat unusual considering the depth of the well as deep wells on the Gulf Coast generally have been producers of higher gravity oil.

Although deeper, No. 7 does not compare with No. 6, which has been a consistent producer. The latter which flowed under chokes 2,500 bbls. daily initially still is flowing steadily with increasing gas pressure and volume and oil production is at 720 bbls. net daily. It is making enough gas to furnish fuel for other drilling operations of the company at Jennings. Although No. 7 cannot be called a profitable well at its present flow, late reports in Houston were to the effect that the production was increasing.

These wells are two of a series of deep wildcats being drilled by Yount Lee Oil Co. around the sides of the Jennings Dome. More than a dozen deep holes already have been drilled, one of which went to 8,250 feet, the deepest level ever reached by a bit on the Gulf Coast. With the exception of some short lived deep production around 4,300 feet on the northwest side of the dome obtained by the E. F. Simms interests last year, and this year by the Kathleen Oil Co., the production on the southeast by Yount Lee Oil Co. so far is the only deep oil at Jennings. The Simms interests have abandoned all their holdings on the west and northwest sides of the dome after a disappointing drilling campaign but lately Yount Lee Oil Co. has gone in on that side for a deeper test and is drilling its No. 1 Simms Fee below 6,700 feet. This company is drilling another deep test on the northeast, No. 5 Crowley, which follows No. 4 Crowley, the deepest hole on the coast. Just south of Yount Lee Oil Co.'s Houssierre-Latrielle tract on the southeast, The Texas Company's No. 5 Rayne Heirs has reached a depth of nearly 5,800 feet. This is a wildcat approximately 1,600 feet from Yount Lee's No. 6 Houssierre-Latrielle and was started soon after the bringing in of the latter.

Deep Tests at Humble

Renewed interest in deep sand possibilities is likely at Humble with the starting of an active development play to the eastern side of that dome in an effort to extend the deep production of the south side in that direction. The Texas Company the past week rigged up on three tests all to the east and north of the south side production. Previous development trends have been to the westward where the field's most prolific production has been obtained and where drilling still continues active although there have been no completion developments the past few weeks. The recent settlement of a long pending suit involving The Texas Company, Atlantic and Gulf Petroleum Cos.' rights on the original Burt and Griffith holdings on the east side of the dome has enabled the starting up of development in that direction. Under the settlement The Texas Company will develop the property which in the earlier days produced millions of barrels of oil from the shallow sands but which never has been prospected for the lower horizons. This property lies to the north of The Texas Company's Stevenson tract where deep production has been found offsetting South Texas Petroleum Co.'s Morris tract, on which the first deep production on the south was found. The Texas Company also has rigged up for a deep test on the Carroll Oil & Gas Co. tract, which is to the north of the Burt and Griffith property on the far east side of the dome, and also for a deep test on the Koehler tract, which lies still further north. The only other really deep test given the east side of the dome was by the South Texas Petroleum Co. on its Burt tract but that test, which was abandoned below 5,800 feet, was somewhat farther out from the dome.

Louisiana Wildcats

Of considerable interest are wildcats which are to be started up by the Vacuum Oil Co. on two very recently discovered geophysical dome prospects, one in St. Mary's Parish, Louisiana, and the other in Cameron Parish. The St. Mary Parish prospect, which was made known only within the past several months, lies to the north of the town of Patterson in Township 15s-11e. The location, which is on the Zenor holdings, is in Section 21. This prospect was discovered with the seismograph by the Vacuum Oil Co. which was able to obtain virtually 100 per cent of the acreage considered favorable, the north part of which is cut up into numerous fee ownerships.

In Cameron Parish, Vacuum is preparing to move in material for No. 1 Cameron Meadows Land Co., location for which is Section 21-14s-13w. This location is in a very swampy area and for several weeks the company has been dredging a canal to the location. This dome prospect also was discovered by the seismograph. It is approximately 12 miles to the northeast of where Yount Lee Oil Co. is drilling a rank wildcat, No. 1 Stark, Section 1-15s-15w, which now is down approximately 7,600 feet. Both are in what is known as the Johnson's Bayou district, an area which is considerably removed from any previous wildcatting attempts.

These are two of a series of wildcats being started on new dome prospects in southern Louisiana, which promise a number of interesting developments during the coming year. In Jefferson Davis Parish, southwest of Welsh, Pure Oil Co. has rigged up for No. 1 Day, Section 1-10s-5w, the first test on another new prospect. Gulf Refining Co. already is drilling on its first test at Wisner in the extreme southern end of Plaquemine Parish, and is rigged up for the first at Napoleonville although this dome has been known for several years. Standard Oil Co. has a location for the first test on Bayou Des Glaise. A number of other new prospects are being given their first tests but drilling is farther along.

At Bay Junop the only one of the seven geophysical domes being developed by The Texas Company which remains to be proved either as a dome or for production, has drilled back to the oil sand at 4,778 feet topped several weeks ago and which was lost due to stuck drill stem and will core a few feet deeper, set casing and test. The sand bears promise of making an oil well and is the deepest of any yet found on any of the seven domes.

Gulf Coast Completions

Except for Gulf Production Co.'s No. 4 Burrell on the southeast side of Fannette, Jefferson County, and the same company's No. 38 Davis, north side of Big Creek, completions on the Gulf Coast were of little size or consequence. These two wells were brought in the fore part of the week, the former flowing 3,000 bbls. of pipe line oil from sand at 4,248 feet, and the latter 3,000 bbls. at 4,292 feet. The Fannette well extended production approximately 800 feet northeast of the same company's No. 12 Thomas which came in several months ago flowing 3,600 bbls. daily and which definitely established Fannette as a major producing dome. The Big Creek well was a former well deepened but was one of a series of good wells completed at Big Creek the past year, offsetting The Texas Company's No. 3 Fee, which flowed initially at the rate of 9,000 bbls. daily.

On the Sheeks or Esperson Dome prospect in western Liberty County, Cranfill & Reynolds Co. completed its No. 1-A Vajdak as a small dry gasser at a depth of approximately 5,750 feet. This well, which is approximately 125 feet to the northeast of Yount Lee Oil Co.'s No. 1 Moore's Bluff, the discovery well, failed to find the production obtained by the discovery well at 3,326 feet, but of considerable interest is the fact that its dry gas is from the top of the Jackson. The well is shut in waiting orders.

Gulf Production Co.'s No. 3 Boyt at Hankamer, southern Liberty County, which tested salt water at 3,700 feet, is pulling screen preparatory to deepening.

Daily Average Production

Daily average production of coastal fields for the week ending December 28 declined slightly to 176,397 bbls. Figures by fields are:

SOUTHEAST TEXAS	
Allen	10
Barbers Hill	16,754
Batson	1,300
Big Creek	6,922
Blue Ridge	1,875
Brenham	136
Boling	1,172
Clay Creek	1,777
Damon Mound	520
DeWalt	12,200
Fannette	2,455
Goose Creek	5,330
Hankamer	9
High Island	1,418
Hull	10,267
Humble	11,264
Jasper County	25
Lost Lake	804
Markham	361
Nash	515
North Dayton	2,000
Orange	2,712
Orchard	71
Pierce Junction	11,783
Port Neches	3,018
Raccoon Bend	8,600
Refugio	19,837
Sheeks	660
Saratoga	976
Sour Lake	2,405
So. Liberty-So. Dayton	5,301
Spindletop	18,814
West Columbia	6,551
Total Texas Coast	157,842
Week ending December 21	158,282
Decrease	440

SOUTH LOUISIANA	
Anse La Butte	45
Bayou Bouillon	105
Black Bayou	45
Dog Lake	5
Edgerly	626
Jennings	1,577
Hackberry	3,800
Lake Barre	314
Lake Pelto	218
Lockport	2,919
New Iberia	15
Port Barre	171
Sorrento	140
Starks	568
Sulphur	3,050
Sweet Lake	18
Vinton	4,321
Welsh	258
White Castle	330
Total South Louisiana	18,555
Week ending December 21	20,705
Decrease	2,150
Total Gulf Coast	176,397
Week ending December 21	178,987
Decrease	2,590

GULF COAST FIELDS AND WILDCATS

Week Ended December 28

BARBERS HILL—CHAMBERS COUNTY

Mills Bennett Production Co.'s No. 2 Collier (southwest)..Drlg. lime 5,693 ft.
Mills Bennett Production Co.'s No. 2 Barber, north side..Drlg. sand, showing oil 5,608 ft.
Mills Bennett Production Co.'s No. 3 Hammon-Armstrong (southeast) ..... Rigging up to pump 5,166 ft.
Mills Pennett Production Co.'s No. 2 Means (east) ..... Drlg. rock 1,747 ft.
Mills Bennett Production Co.'s No. 2 Wilburn, southeast.. Drlg. shale 1,700 ft.
Humphreys Corp.'s No. 8-A Kirby, north flank ..... Drlg. hard sand 6,381 ft.
Humphreys Corp.'s No. 2-C Kirby ..... Drlg. shale 3,090 ft.
Humphreys Corp.'s No. 1 McLean, east side ..... Drlg. rock 4,092 ft.
Humphreys Corp.'s No. 2 Ilfrey, east side ..... Drill pipe stuck 1,406 ft.
Humphreys Corp.'s No. 1 Morgan ..... Rig.
McAlbert Oil Co.'s No. 4 Woodward southeast ..... Derrick.
Republic Production Co.'s No. 3 Kirby (southeast)..... Showing oil at 3,500 ft.
Rexal Oil Co.'s No. 3 McLean, east flank ..... Rigging up to pump 5,170 ft.
Sinclair Oil & Gas Co.'s No. 2 Wilburn, southeast ..... Drlg. shale 4,754 ft.
Sinclair Oil & Gas Co.'s No. 1 McKinney (workover) .... Drlg. oil sand 5,384 ft.
Sun Oil Co.'s No. 2 Wilburn, southeast ..... Drlg. shale and lime 4,638 ft.
Sun Oil Co.'s No. 3 Wilburn, southeast ..... Drlg. oil sand 5,296 ft.
Sun Oil Co.'s No. 4 Wilburn (southeast) ..... Derrick.
Sun Oil Co.'s No. 2 J. Wilburn (southeast) ..... Derrick.
Sun Oil Co.'s No. 4 Chambers (south) ..... Drlg. sand and lime 2,013 ft.
Sun Oil Co.'s No. 3 McKinney, southeast ..... Drlg. sandy shale and lime 3,686 ft.
The Texas Company's No. 1 Lawrence ..... Waiting fuel to deepen 5,260 ft.
Unice Oil Co.'s No. 2 Feldman, east ..... Rig.
Yount Lee Oil Co.'s No. 10 Chambers (south) ..... Drlg. shale and lime 3,796 ft.
Yount Lee Oil Co.'s No. 11 Chambers, south ..... Drlg. sand and shale 4,082 ft.
Yount Lee Oil Co. No. 5 Woodward, southeast ..... Comp. flowing 550 bbls. fluid, 30 per cent salt water, 5,350 ft.

BOLING—FORT BEND AND WHARTON

Houston Gulf Gas Co.'s No. 1 Fields (northwest)..... Drlg. gumbo 2,037 ft.

RACCOON BEND—AUSTIN COUNTY

Humble & Valley's No. 5 Austin College ..... Drlg. shale and boulders 710 ft.
Humble & Valley's No. 6-A Bracey ..... Derrick.
Humble & Valley's No. 7-A Bracey ..... Location.
Humble & Valley's No. 3 Buchanan ..... Derrick.
Humble Oil & Refg. Co.'s No. 8-B Deutrich ..... Waiting cement to set 1,090 ft.
Humble & Valley's No. 9-A Deutrich ..... Drlg. sand and shale 3,200 ft.

(Continued on Page 110)

Lea County Well Doubles Output

Was Discovery of New Pool in Cooper Area Last November. Jal Pool Has 500-Bbl. Completion. Gas Show in Idaho

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Dec. 30.—Developments in Lea County, New Mexico, took precedence this week over operations in other parts of the Rocky Mountain area. The Texas & Pacific Coal & Oil Co.'s No. 2 State, in the Cooper area, which opened a new pool in November, was deepened 17 feet and responded with a large increase in production, making 480 bbls. in the first 24 hours and 510 bbls. in the second period. Cranfill & Reynolds' No. 2 State, in the Lea Pool, an offset to the discovery well, is coming in as a producer, swabbing 350 bbls. in 21 hours, and the Empire Gas & Fuel Co.'s No. 1 Lindley, in the Jal Pool, is estimated good for 500 bbls. and 6,000,000 feet of gas at 3,380 feet. The Transcontinental Oil Co.'s No. 1 McWhorter, in DeBaca County, has been abandoned.

The principal development in Colorado was in the White Eagle Oil & Refining Co.'s test in the Green River formation on the Piceance Creek structure in Rio Blanco County, which showed a considerable increase in the gas when deepened a few feet. Several of the Colorado wildcats are at critical stages.

A substantial show of gas was encountered in Teton County, Idaho.

Wyoming had one failure to report, this being in Johnson County, several wells shutting down for the winter, and no completions.

NEW MEXICO

The Texas Pacific Coal & Oil Co.'s No. 2 State, NW cor. SW, Section 21-23-36, in the Cooper area, north of the Jal Pool in Lea County, New Mexico, yielded a surprise when it was deepened 17 feet and responded with more than 100 per cent increase in production. This well, which opened a new pool, was completed at 3,712 feet last November and made an average flow of 240 bbls. daily at the start, the gas-lift method being used to flow the well. It was averaging around 200 bbls. a day when it was decided to deepen it. It was drilled to 3,729 feet and responded by putting 480 bbls. into the tank in the first 24 hours. In the second 24-hour period it made 510 bbls. and 4 per cent water. The Texas Pacific Coal & Oil Co.'s No. 3 State, NW SW NW, Section 21-23-36, one-fourth of a mile to the north of the producer, is rigged and ready to spud, and Cranfill & Reynolds' No. 1-C State, SW SE SW, Section 16-23-36, is digging cellar.

In the Eunice area, north of the Cooper area and to the east of the Lea Pool, the Continental Oil Co.'s No. 1 A. E. Meyers, NE SW SW, Section 17-21-36, which last week was showing for 20 to 25 bbls. per hour and 70,000,000 feet of gas per day from a total depth of 4,001 feet, is running casing to shut off the gas which is coming from horizons above the oil pay. This well also opens a new pool. Until the gas is shut off it is not definitely known what the well will make, but estimates run from 600 bbls. to almost twice that quantity. The same company's No. 1 William Meyers, SW cor. NW, Section 28-2-36, is fishing at a total depth of 3,750 feet. The Empire Gas & Fuel Co.'s No. 1 Closson, NE NW SE, Section 6-22-36, is drilling at 3,718 feet in hard lime. The hole was reduced to 5⅜-inch at 3,703 feet.

Lea Area

In the Lea area, Cranfill & Reynolds' No. 2-B State, NW cor., Lot 9, Section 2-21-33, one location west of the same firm's No. 1-B State, which is pumping around 2,200 bbls. a day, is bottomed in lime at 3,759 feet and swabbed 350 bbls. in 21 hours, the oil being swabbed down. There was 700 feet of oil in the hole at 3,724 feet and 2,500 feet at 3,743 feet. The new well appears to be running about 3 feet higher than the well it offsets. It will be recalled that No. 1-B State swabbed 350 bbls. in five hours when it first came in. After being tubed it made better than 1,200 bbls. and gradually increased up to 2,200 bbls. No. 2-B State will be watched to see if it repeats the performance of the other well. The same firm's No. 3-B State, SW cor., Lot 9, Section 2-21-33, one location south of No. 2-B, is shut down at 3,424 feet with the 8¼-inch cemented on bottom. The Texas Production Co.'s No. 1-A State, SE cor., Lot 8, Section 2-21-33, is bottomed at 3,475 feet in lime and fishing for bit. The same company's No. 2-A State, SW cor., Lot 8, Section 2-21-33, is drilling at 2,012 feet in salt. The Texas Company's No. 1-B State, SW cor., Lot 5, Section 1-21-33, is drilling at 2,105 feet in salt. The top of the salt was at 1,810 feet. The Amerada Petroleum Corp.'s No. 1 State, SW cor., Lot 7, Section 1-21-33, is drilling at 3,838 feet in lime and is getting rather deep. It is three-fourths of a mile east of No. 1-B State, the nearest producer. Snowden & McSweeny's No. 1 State, NW cor. SW, Section 1-21-33, half a mile south and a little east of the nearest producer, is drilling out cement plug after setting the 10-inch at 3,750 feet. It topped the anhydrite at this depth and is running lower than the producers to the north. The Continental Oil Co.'s No. 1 State, NW cor., Lot 12, Section 1-21-33, is drilling at 3,480 feet, and its No. 2 State, SW cor., Lot 12, Section 1-21-33, is shut down at 617 feet. Cranfill & Reynolds' No. 1-D State, SE cor., Lot 6, Section 3-21-33, west of the producers, is building rig.

Jal Area

In the Jal area in the southeastern part of the county, the Empire Gas & Fuel Co.'s No. 1 Lindley, C NE SE, Section 14-25-36, is bottomed in lime at 3,380 feet and is estimated good for 500 bbls. and 6,000,000 feet of gas. It had oil and gas shows at 3,126-33, 3,171-77, 3,201-04, 3,273-79, 3,288-92, 3,300-04 and 3,316-36 feet. It is one-fourth mile northwest of the nearest producer. The Continental Oil Co.'s No. 2 Sholes, SW cor., NW, Section 13-25-36, is shut down after rigging up, and the Humble Oil & Refining Co.'s No. 3-A Lindley, NW cor. SW, section 13-25-36, has rig up. The Magnolia Petroleum Co.'s No. 1-X Lindley, SE cor. NE, Section 26-25-36, is drilling at 1,120 feet in the red beds. The top of the anhydrite was at 1,090 feet.

In the Hobbs area in Lea County, the Humble Oil & Refining Co.'s No. 1 Bowers, C NE SE, Section 30-18-38, 3 miles to the northwest of the nearest producer in the Hobbs Pool, is bottomed at 3,818 feet in anhydrite and preparing to core. A core taken at 3,806-18 feet showed saturation. The Midwest Refining Co.'s No. 24 State, NE SE SW, Section 10-19-38, is bottomed at 4,075 feet and is waiting for cement to harden. The 8¼-inch was set on bottom. Its No. 13 Terry, SE NE SW, Section 10-19-38, is drilling at 2,985 feet and had a good show of gas at 2,970 feet. The Shell Petroleum Corp.'s No. 1 Thorpe, SW NW SE, Section 10-19-38, is drilling at 3,287 feet in lime and anhydrite. The Midwest Refining Co.'s No. 6 Wright, NW cor. SW, Section 14-19-38, is bottomed at 1,700 feet with the 10-inch cemented at 1,672 feet. The Penn Oil Co.'s No. 1 State, NE, Section 21-19-36, west of the Hobbs area, is drilling at 3,460 feet in lime and anhydrite.

In the Lovington area, the Barnsdall Oil Corp.'s No. 1 Bronson, SE cor., Section 28-16-38, is drilling at 1,995 feet in red rock and lowering the 10-inch.

In the Empire area east of the Lea Pool, the Empire Gas & Fuel Co.'s No. 3-B State, SW NE SE, Section 5-21-35, is drilling at 4,385 feet in hard lime.

Tatum Area

In the Tatum area, Buell & Hagen's No. 1 State, C NE, Section 33-11-35, has resumed after renewing contract to drill deeper and is drilling in lime at 4,672 feet, and A. D. Morton's No. 1 State, C NW, Section 32-11-38, is drilling at 2,440 feet in salt and red shale. The top of the salt was at 2,380 feet and the elevation is 3,901 feet.

The Rector Oil Co.'s No. 1 King, NE NE, Section 26-25-32, in the southwestern part of Lea County, is bottomed at 4,040 feet in salt and drilling up bailer.

In DeBaca County, the Transcontinental Oil Co.'s No. 1 McWhorter, SE SW NW, Section 6-3s-22, La Mora district, is being abandoned at a total depth of 4,770 feet, the hole being lost at that depth with the tools on bottom. It had 4,500 feet of salt water in the hole at 4,655-60 feet.

In San Juan County in the northwestern part of the State, the Southern Union Gas Co.'s No. 1 Garland, NE NE, Section 11-28-11, Kutz Canon district, is being abandoned at 3,050 feet and rig will be skidded to start a new hole to be drilled with a rotary. The old hole was drilled by the Angel Peak Oil Co. and no new depth to amount to anything has been made since last May when the gas became ignited and burned the rig. A new rig was erected but the tools and a bailer were in the hole and these could not be recovered. The hole was bottomed in the Picture Cliff formation and made around 3,000,000 feet of gas per day. New hole will be carried through this horizon to the mesa verde sands.

UTAH

Utah operations revealed little news of importance. The Cisco Springs Syndicate's No. 1 Moss, SE cor. SW, Section 9-20-23, in Grand County, is still bottomed at 1,985 feet, just above the Dakota and is sidetracking tools. The Continental Oil Co.'s No. 1 Boundary Butte, Section 22-43-22, San Juan County, is bottomed at 5,570 feet and cleaning out. Casing is at 5,612 feet. New interests have taken over the Crescent Oil Syndicate's No. 1 McCarthy, SW SW, Section 27-21-19, Crescent area in Grand County, and are resuming at 2,000 feet. The Utah Oil Refining Co.'s No. 31 Pary, Section 14-39-1w, Kane County, is drilling at 1,090 feet in buff-coolred sand, the bit having been in that horizon for the past 800 feet.

COLORADO

The several completions which were expected in Colorado by Christmas day failed to materialize though the holiday was not entirely without its interesting developments. One was in the White Eagle Oil & Refining Co.'s No. 1-A Fordham, NW SW, Section 9-2s-96, Piceance Creek structure, Rio Blanco County, a test being drilled entirely in the Green River formation of Tertiary age. No new hole was made in this test since it had a blowout several months ago at 2,810 feet until this week. The hole was deepened a few feet and the volume of gas showed a substantial increase. Drilling was suspended to underream and lower the 8¼-inch. No test has yet been

(Continued on Page 118)

NEW RECORD IN DEEP LIME TESTS IN TURNER VALLEY OPERATIONS

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, Dec. 28.—The latest summary of Turner Valley operations shows a total of 14 wells drilling, deepening or standing cemented in the deep lime, a new record for simultaneous deep lime tests. Ten are being drilled by Imperial Oil, Ltd., and four by other companies. A feature of recent operations has been disappointing results of four tests of the Imperial group.

Maryland Oil Co.'s No. 1, LSD 10, Section 17-19-2w5, is drilling deeper. At 5,970 feet, 529 feet in the lime, it had a small gas flow. It is claimed the gasoline content was the best yet shown in the Turner Valley, but gas production was not sufficient to make it a commercial well. A previous test in the upper part of the lime failed to develop commercial results, though a heavy gas flow was met which pinched out after a few minutes. At 529 feet in the lime, Mayland's No. 1 is approximately 350 feet deeper in the producing formation than the Home wells were when they got their big production.

Further south, Foothills Oil & Gas Co.'s No. 3 (South West Petroleum), LSD 16, Section 8-19-2w5, finished a production test 437 feet in the lime at 5,915 feet. After bailing some 2,000 feet of drilling mud the well failed to show any large gas flow, and will be deepened.

There is some controversy among Turner Valley operators as to the possibility of heavy rotary mud in these deep tests clogging the lime and holding back production. It is claimed the pressure forces the mud into the porous lime and after a time the mud set or hardens, effectively sealing off the flow. It is stated that in one of the McLeod wells traces of the drilling mixture were found 20 feet below the point where its use was discontinued. Northwest Associated's No. 1 well some months ago blew into large production after having been apparently temporarily sealed off in this way. On the other hand some geologists claim that failure of Mayland's No. 1 to get production at the normal footage in the lime was due to the steeper folding of the formation in this portion of the structure, making it necessary to drill between 500 and 600 feet to get the same geological depth in the lime which the Home wells got around 175 feet.

Another disappointing test was Royalite Oil Co.'s No. 23, NW Section 31-19-2w5. At 5,089 feet it blew in and cleaned itself of mud with a wet gas flow estimated 10,000,000 feet a day, but proved unsatisfactory on production test, and is being drilled deeper. It was 269 feet in

(Continued on Page 113)

KNOW

that 3 Safety Features stand by to grip your Line!

...in the K.M. CO. CHAIN-DRIVEN SAND REEL

1 Friction Clutch operates through Brake, taking a controlling "grip" on the line.

2 Since Clutch operates through Brake, chance failure of Clutch mechanism does not affect Brake, which can immediately "grip" the line.

3 Emergency Brake, located in center of shaft, which means greater braking power under most operating conditions, "grips" the line in the event of failure of both Clutch and Brake Mechanisms.

The KM CO Chain-Driven Sand Reel insures the operator against losses through defective or short-sighted design. The three Safety Features listed at the left represent the acme of Sand Reel efficiency when it comes to absolute control of the line.

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California Situation Looks Better

Curtailment Program Becomes a Little More Effective and Greater Degree of Permanency Attained. Santa Fe Springs Chief Difficulty

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Dec. 28.—With the passing of each succeeding week California's crude oil curtailment program becomes a little more effective and a greater degree of permanency is attained. Santa Fe Springs is the only disconcerting factor in the curtailment program at the present time and this field will continue to fluctuate from week to week due to the completion of new prolific wells in the deep zones. On the whole, however, California's curtailment program has been exceptionally successful and with continued co-operation among producers marketers will be able to maintain stabilized prices on both crude and refined oils. Production at Long Beach is down to within a few thousands barrels of the field's allowable maximum production of 100,000 bbls. daily and no difficulty is anticipated in keeping it at this level. Operators at Seal Beach went over the top right at the start of the curtailment movement due to the splendid co-operation of the Associated, Continental and Standard Oil Companies. The maximum for this field was set at 30,000 bbls. daily and it is interesting to note that during the month of November the daily average production of this field was 30,578 bbls. This is only 578 bbls. above the allowable maximum.

The Elwood Field of Santa Barbara County dropped way below its allowable maximum production of 30,000 bbls. daily when the output during the past 24 hours totaled 23,000 bbls. Ventura Avenue, operating on a different basis of curtailment, reached its objective of 50,000 bbls. a day late in the week and operators hope to keep it there, notwithstanding that this entails considerable engineering work. Some 25 or 30 producing wells were shut down entirely during December in order to achieve the desired goal. The exceptionally high gas-oil ratio of producing wells in this field taxes the ingenuity of operators to the maximum in order to curtail crude oil production and at the same time maintain as favorable a gas-oil ratio as possible. This is not an easy task because of a peculiarity of the field that when one producing well is shut in the natural gas production shows a substantial increase in the offset well.

California's crude oil curtailment program, which has reduced daily production approximately 175,000 bbls. during the past 60 days and effected a reduction of 1,096,094 bbls. in crude and refined oil stocks during November, has also been reflected in the operation of refineries. During the month of November California refiners ran 654,895 bbls. per day of crude oil to stills, as compared with 739,221 bbls. during the month of October. This represents a decrease of 84,326 bbls. per day. That a corresponding reduction was effected in the production of gasoline is evidenced by the fact that the daily production of 256,272 bbls. in November is 20,663 bbls. less than the daily production of gasoline during the month of October, which aggregated 276,935 bbls. The production of natural gasoline also showed a decline during November, the output being 8,568 bbls. per day less than the average output during the month of October.

Kettleman Hills

Daily production at Kettleman Hills is due to receive a substantial boost during the month of January due to the completion of two wells unless something unforeseen develops. The wells scheduled to be finished in this area are located in proven territory and therefore destined to register commercial production. The General Petroleum Co. has just about completed cleaning out a number of former producing wells in the Lost Hills Field of Kern County and everything is ready to proceed with work at Kettleman Hills. No. 1 Oschner in the latter area was passed for production more than a week ago but completion has been held in abeyance until other work had been finished at Lost Hills where approximately 100 pumpers are being returned to production following a suspension of several years' duration. It is the intention of the General Petroleum to comingle the Kettleman Hills oil with that from Lost Hills in order to facilitate transportation to the Torrance refinery near Los Angeles. No. 1 Oschner should be on production therefore some time during the coming week if everything goes along smoothly. No. 2 Oschner, in Section 20-22-18, on the other hand, is still delayed with mechanical trouble at 7,120 feet. Preparations are also being made by the Standard to finish No. 8, in Section 1-22-17, and this project will probably be given a production test early in the year. It has been carried down to 7,108 feet and finished with a string of 5¾-inch carrying 833 feet of 150-mesh screen. This well was cemented through perforations at 6,200 feet.

With the exception of the preparations under way to finish the two wells just mentioned, the past week was a rather uneventful period as far as development work in the Kettleman Hills Field of Kings County was concerned. Several more drilling projects are scheduled to be suspended in this field soon in conformity with the Kettleman Hills agreement which contemplates a restriction in both production and drilling activities until July 1, 1931. The Standard is making preparations to suspend work on No. 261, in Section 11-22-17, at 6,981 feet, and in No. 58, in Section 17-22-18, at 7,050 feet. Fifty sacks of cement were dumped in the former well and 75 sacks in the latter. Upon the suspension of work on these two wells, the Standard will have five wells idle as No. 87 in Section 13-22-17, No. 78 in Section 7-22-18 and No. 87 in Section 17-22-18 were previously suspended. The producing wells in the north dome at Kettleman Hills, No. 8 Elliott of the Continental in Section 12-22-17 and the Milham's No. 1 Elliott in Section 2-22-17 are producing 6,250 bbls. and 3,400 bbls., respectively, at the present time. The Standard's No. 81 in Section 11-22-17, which was finished last July at 6,673 feet but subsequently killed for deepening, has been recemented following the failure to secure a satisfactory water shut-off on the first job, and, if the company is successful this time, drilling will be resumed immediately. This well, together with No. 2 Oschner of the General Petroleum and No. 8 of the Standard in Section 1-22-17, will be permitted to remain on production following completion in accordance with the terms of the Kettleman Hills agreement.

Santa Fe Springs

The industry had a little respite during the past week from the orgy of completions which has characterized deep zone development at Santa Fe Springs, but the big parade will start again within the next day or two and should continue practically unabated for the next several weeks. Field production showed a little decline during the past week but should show a substantial increase during the early part of January, as there are 15 wells scheduled for completion on or about January 1. Percentage cuts in production of the major companies are expected to reach as high as 65 per cent at Santa Fe Springs beginning January 1, as the marketing companies are going to keep production down to around 150,000 bbls. daily if they have to penalize themselves to do it. Smaller operators having one or two producing wells will probably escape this heavy penalty as the major companies are desirous of showing them their appreciation for their whole-hearted support in putting over the crude oil curtailment program so vitally necessary to stabilization.

The Texas Company, which had only put two wells on production at Santa Fe Springs during the current month to date, made up for lost time this week by recompleting three former upper zone producers doing 9,235 bbls. per day. These rejuvenated wells were No. 10 on Mattern Lease No. 2, No. 5 Standlee and No. 6 Weaver. The largest of this trio was No. 6 Weaver, which came in under

TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	997,250	2,988,419
Fuel oil	.....	.....	.....	.....	468,825	143,471
Diesel and gas oil	260,673	37,239	80,433	11,490	3,243,568	2,072,117
Gasoline	226,423	32,346	328,168	46,881	20,863,279	14,419,722
Kerosene	.....	.....	.....	.....	49,750	.....
Naphtha distillate	.....	.....	.....	.....	81,750	329,100
Coastwise—						
Crude oil	192,564	27,509	299,000	42,714	24,960,161	24,559,243
Fuel oil	315,804	45,115	538,527	76,918	19,714,281	17,260,984
Diesel and gas oil	39,406	5,629	23,476	3,354	1,258,416	1,138,167
Gasoline	229,592	32,799	432,030	61,719	11,488,671	9,860,743
Kerosene	2,416	345	.....	.....	72,997	67,896
Naphtha distillate	.....	.....	.....	.....	.....	239,071
Exports—						
Crude oil	69,623	9,946	.....	.....	5,913,632	2,103,835
Fuel oil	421,638	60,234	341,584	48,798	19,036,482	22,070,957
Diesel and gas oil	85,517	12,217	.....	.....	2,838,234	2,297,059
Gasoline	421,958	60,280	413,224	59,072	12,488,335	7,865,892
Kerosene	78,915	11,274	98,195	14,028	3,212,236	3,940,564

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC AND GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	.....	418,188
Gasoline	.....	.....	.....	.....	.....	2,275,638	2,231,234
Lubricants	.....	.....	.....	.....	.....	138,706	277,151
Coastwise—							
Fuel oil	75,060	10,723	32,416	4,631	3,103,863	3,490,092	
Diesel and gas oil	.....	.....	.....	.....	.....	366,004	279,197
Gasoline	168,429	24,061	144,517	20,645	5,306,260	4,859,045	
Kerosene	2,518	360	.....	.....	.....	207,892	228,923
Exports—							
Crude oil	.....	.....	.....	.....	.....	126,528	167,703
Fuel oil	.....	.....	.....	.....	.....	841,631	2,222,314
Diesel and gas oil	.....	.....	.....	.....	.....	393,132	109,049
Gasoline	9,088	1,155	87,480	12,497	5,425,387	4,471,496	
Kerosene	.....	.....	.....	.....	.....	624,180	786,553
Lubricants	4,780	683	.....	.....	.....	34,575	47,218

MOUNT PLEASANT LEADS MICHIGAN IN COMPLETIONS AND PRODUCTION

By Special Correspondent

MUSKEGON, Mich., Dec. 30.—The Mount Pleasant Field of central Michigan led the State during the past week in new completions, new production and new developments. Four new wells varying in initial production from 100 to 600 bbls. a day added more than 1,500 bbls. and increased the daily production to about 8,500 bbls. All four wells are in Chippewa Township, Isabella County, the west half of the proven field. Two of them gave the Pure Oil Co., which opened the field, new initial production of about 1,000 bbls. a day. The other two were drilled by the Chippewa Oil & Gas Co. and the Mount Pleasant Oil & Gas Co., respectively.

The Pure Oil Co.'s No. 2 Charles S. Harkins, NE SE, Section 11-14n-3w, Chippewa Township, Isabella County, was the largest making 600 bbls. initial in the Dundee topped at 3,530 feet. The bottom of the hole is at 3,590 feet.

The other new Pure company well is No. 3 Sarah Roebuck, NE NW, Section 13-14n-3w, which made 400 bbls. initial from Dundee struck at 3,560 feet. The formation was topped at 3,528 feet and the hole is 3,590 feet.

The Chippewa Oil Co.'s No. 6 Joslin, NW SW, Section 12-14n-3w, was the second largest new producer, 500 bbls. a day initial. The Dundee limestone was topped at 3,532 feet, the pay at 3,555 feet and drilling was completed at 3,590 feet.

The Mount Pleasant Oil & Gas Co.'s No. 2 Morrison-Bortz, SE SE, Section 1-14n-3w, had an initial of 100 bbls. Top of the Dundee was struck at 3,508 feet, the pay at 3,546 feet and the hole was completed at 3,585 feet.

The Sias Development Co.'s No. 1 Frank Muma, SW NW, Section 2-14n-3w, which struck a pocket of gas in the Marshall formation at 1,145-60 feet two weeks ago, is dead and shut down for the holidays. It is expected it will be carried on to the Dundee for almost certain production.

Gratiot Wildcat Dry

The first of five Gratiot County wildcats to be completed was reported dry in the Dundee formation at 3,330 feet. It was the Maeston Oil Co.'s No. 1 Corwell estate, SW SW, Section 27-12n-1w, Wheeler Township, near the village of Wheeler and just a short distance south of State Trunk Line M-46. Gratiot County is south of Midland County. Bottom salt water was struck at a lesser depth than the top of the Dundee in the proven field.

As 1929, the greatest year in the infant oil industry of Michigan, came to a close there were fewer rigs active in the Muskegon Field and the surrounding four western Michigan counties than at any time since early in 1928 shortly after the discovery well was brought in. Only five wells are drilling, two fishing and one with a rig on the ground. Four are drilling in the Muskegon Field and the

(Continued on Page 114)

a natural flow during 5,480 bbls. of clean 34.6 gravity oil daily from 8,097 feet. No. 5 Standlee, which was bottomed at 7,880 feet, was returned to production flowing 2,160 bbls. of 34.5 gravity oil daily, while well No. 10 on Mattern Lease No. 2 showed an initial of 1,595 bbls. from 7,738 feet. The Wilshire Oil Co. successfully recompleted No. 2-A Peterson after redrilling and deepening it from the upper to the lower horizon and this work resulted in the completion of a 3,925-bbl. producer from 7,950 feet. This company, incidentally, has several other drilling wells near completion. The Ambassador Petroleum, a subsidiary of the Wilshire Oil Co., completed No. 15 Baker, a new well doing 750 bbls. daily from 7,957 feet.

The largest well finished in the Santa Fe Springs Field during the past week was the Superior Oil Co.'s No. 4 Wardman, a former upper zone producer. Upon being returned to production, this well made better than 1 bbl. of oil for each foot of hole drilled as it came in doing 9,795 bbls. of clean 34.7 gravity oil and 10,000,000 feet of saturated gas daily from the O'Connell zone at 7,900 feet. This is the second large producer finished by the Superior Oil Co. at Santa Fe Springs during December. No. 5 Wardman, a previous completion on the same lease, was finished during the early part of the month flowing 8,550 bbls. daily from 7,933 feet. The General Petroleum, which has added eight new wells to its list of producers during December, chalked up another when No. 235 Santa Fe was recompleted in the O'Connell horizon early this week. This project, upon being redrilled and deepened to 8,045 feet and finished with a 3-inch liner carrying 680 feet of perforated, was returned to production flowing 3,510 bbls. of unusually clean 34.7 gravity oil daily. This company is running 50 strings of tools in the Santa Fe Springs Field at the present time and consequently has a number of other potential producers on the verge of completion. George F. Getty, another aggressive operator, is expected to complete two new wells shortly after the first of the new year and will have several more on production shortly thereafter. The Union Oil Co., with three completions to its credit during December, expects to complete Nos. 46 and 50 on the Bell Lease, No. 19 Alexander and No. 13 Howard between now and January 10.

Playa Del Rey

The area immediately adjacent to the Ohio Oil Co.'s discovery well at Playa Del Rey has become a beehive of activity practically overnight. Town lots in this vicinity, which a couple of weeks ago could have been purchased in fee for a few thousand dollars, are commanding the usual fabulous prices. Large cash bonuses have already been paid and in several instances the premium has greatly exceeded the fee price prevailing previous to completion of the Ohio's discovery. Most of the lots leased up to the present time carry a one-sixth royalty, although a couple of deals have been made on a 25 per cent basis. The leasing campaign under way at Playa Del Rey and Venice is especially interesting because of existing restrictions against the drill. The Ohio has a substantial block of acreage surrounding the well free from any drilling restrictions in addition to several community leases consisting of a number of lots.

It is problematical whether the Los Angeles Planning Commission will lift the prevailing restrictions at Venice in order to permit property owners to participate in production along with their neighbors, but it is generally believed that these restrictions will be lifted at a later date if subsequent developments warrant. The Ohio Oil Co. would probably be better off if the present restrictions remain in effect until some later date as this would preclude immediate intensive development. Several locations have already been staked in the Playa Del Rey area west of the well but nothing can be done in the Venice town lot section located to the north. The Ohio Oil Co. controls approximately 650 acres immediately adjacent to the discovery well and inasmuch as this is located in the county outside the corporate limits of any municipality there are no drilling restrictions to retard work. The Shell has a 60-acre tract north and east of the discovery, some of which may ultimately be proven productive. The Cypress Petroleum and a group of Santa Fe Springs operators have a narrow 1,700-foot strip south of the Ohio's leases which looks good for early work. George F. Getty recently acquired 10 town lots west of the well and has just closed a deal for two lots right smack up against the discovery well, for which he paid plenty according to oil field gossip. The Richfield Oil Co. also has acquired a number of lots and is dickering for several more. The Pacific Western Oil Co. is sitting on top of the world with approximately 100 lots which many regard as located on the trend of the structure northwestward toward the ocean. C. R. McCollom and Rick Templeton sure cut the mustard that time in advising the company to get in on the ground floor ahead of the completion.

The Ohio's discovery well, which is located on the Recreation Gun Club property, has settled down to approximately 2,500 bbls. daily but the company will probably have to shut in production soon unless pipe line connections are made in the very near future. Four 2,000-bbl. steel tanks have already been erected and additional storage facilities are being provided to take care of immediate production. It is the general consensus of opinion that the Ohio's present production is coming from the Miocene but it would not be at all surprising if subsequent drilling revealed the presence of commercial production at a much shallower depth than the bottom of the discovery well, 6,199 feet. The well log reveals an oil showing around 4,700 feet and it may be possible that an oil sand at this depth may have been mudded off with heavy rotary mud, such as happened with the present horizon. This could have been done very easily, especially if the gas pressure was low. It might not be amiss to mention in this connection that the discovery well showed a much larger production than was anticipated. It will be recalled that the well started flowing almost as soon as the drill pipe was pulled preparatory to running a water witch for the purpose of ascertaining if a leak had developed in the casing. The small amount of natural gas, approximately 750,000 feet daily, has occasioned some little surprise, but this might be due to an abnormal condition. One of the most interesting features in connection with the discovery of oil at Playa Del Rey is the unconfirmed report that the Ohio reached the basement complex in this area. If this is correct, no further deeper zones may be anticipated.

Elwood

The Elwood Field of Santa Barbara County has been producing less than its allowable quota of 30,000 bbls. a day for the greater part of the past week, the daily output for one 24-hour period dropping down to 24,000 bbls. This is a reduction of 22,000 bbls. per day from the field's total daily potential production of 45,000 bbls. and indicates a commendable spirit of co-operation between the respective operators. In accordance with the curtailment agreement, operators in the Elwood Field have pledged themselves to refrain from all unnecessary drilling and to keep daily production down to a maximum of 30,000 bbls. until February 1, 1930. It was the original intention to resume drilling operations and lift the embargo on production at the expiration of the time limit set in the curtailment agreement but it looks highly improbable that this action can be taken in view of conditions at Santa Fe Springs where deep zone development will still be going full blast at that time. It is logical to assume, therefore, that the present agreement will either be continued in effect after February 1, 1930, or some other concerted action instituted.

George F. Getty has successfully completed another new well in the Summerland Field of Santa Barbara County where the Lincoln Drilling Co. discovered the existence of a second shallow zone early this year. Getty's new producer, well No. 1 on tideland drilling permit No. 16, registered an initial of 180 bbls. of 19.2 gravity oil daily from 1,570 feet. Three more wells will be spudded in on this lease in the very

(Continued on Page 113)

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well, location—	S.T.R.	Depth	Status
Union, No. 1 Buel Canyon, Santa Barbara Co.	X- 7-31	2,725	br. sh. drilling
Standard, No. 1 Point Conception, Santa Barbara Co.	X- 5-34	3,260	br. sh. drilling
Ohio Oil Co., No. 1 Lompoc, Santa Barbara Co.	2- 6-34	mtl.	building rig
Standard, No. 1 Point Arguello, Santa Barbara Co.	35- 6-36	2,310	redrilling
Calif. Oil Prop., No. 1 San Marcos, Santa Barbara Co.	3- 4-28	3,825	Sespe-drilling
Carey, A., No. 1 Goleta, Santa Barbara Co.	1- 4-28	2,250	rd. sh. drilling
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas well—idle
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	3,050	sd. sh. drilling
General Pet., No. 1 Goleta Tideland, Santa Barbara Co.	21- 4-28	515	sd. sh. drilling
General Pet., No. 2 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
General Pet., No. 3 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building rig
General Pet., No. 4 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
General Pet., No. 5 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
U. S. Pet., No. 1 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
U. S. Pet., No. 2 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
U. S. Pet., No. 3 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
Macmillan Pet., No. 1 Goleta Tideland, Santa Barbara Co.	21- 4-28	mtl.	building pier
Standard, No. 2 Goleta, Santa Barbara Co.	X- 4-29	1,890	reaming
Tannehill, L. B., No. 1 Goleta, Santa Barbara Co.	24- 4-29	4,850	br. sh. drilling
Standard, No. 1 County Farm, Santa Barbara Co.	11- 4-28	2,060	sd. sh. drilling
General Pet., No. 2 Capitan, Santa Barbara Co.	4- 4-30	rig	rigging up
Oakburn Oil Co. No. 1 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Oakburn Oil Co., No. 2 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Oakburn Oil Co., No. 3 Capitan, Santa Barbara Co.	5- 4-30	200	cemented
Oakburn Oil Co., No. 4 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Oakburn Oil Co., No. 5 Capitan, Santa Barbara Co.	4- 4-30	mtl.	building pier
Shell Oil Co., No. 1 Capitan, Santa Barbara Co.	4- 4-30	815	sd. drilling
Fields Gasoline Co., No. 1 Orcutt, Santa Barbara Co.	36-10-34	5,072	recemented
Gorham, H. B., No. 1 Santa Maria, Santa Barbara Co.	33-10-34	4,390	gr. sd. drilling
Wildcat Oil Co., No. 1 Santa Maria, Santa Barbara Co.	20-10-35	4,100	br. sh. drilling
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,000	sd. sh. drilling
Gilmore Oil Co., No. 1 Gibraltar, Santa Barbara Co.	1- 5-28	rig	suspended
Shell, No. 1 Summerland, Santa Barbara Co.	18- 4-25	1,350	br. sh. drilling
Standard, No. 1 Casitas, Santa Barbara Co.	26- 4-25	rig	rigging up
Continental, No. 1 Carpenteria, Santa Barbara Co.	33- 4-25	4,130	gas well—idle
Continental, Tideland permit No. 122, Santa Barbara Co.	33- 4-25	66	sd. sh. drilling
Continental, Tideland permit No. 123, Santa Barbara Co.	33- 4-25	75	sd. sh. drilling
Continental, Tideland permit No. 124, Santa Barbara Co.	33- 4-25	250	sd. sh. drilling
Continental, Tideland permit No. 125, Santa Barbara Co.	33- 4-25	70	sd. sh. drilling
Continental, Tideland permit No. 126, Santa Barbara Co.	33- 4-25	85	sd. sh. drilling
Continental, Tideland permit No. 127, Santa Barbara Co.	33- 4-25	70	sd. sh. drilling
Continental, Tideland permit No. 128, Santa Barbara Co.	33- 4-25	70	sd. sh. drilling
Continental, Tideland permit No. 129, Santa Barbara Co.	33- 4-25	55	sd. sh. drilling
Continental, Tideland permit No. 131, Santa Barbara Co.	33- 4-25	mtl.	drive piles
Getty, George F., No. 1 Carpenteria, Santa Barbara Co.	32- 4-25	68	cemented
Getty, George F., No. 2 Carpenteria, Santa Barbara Co.	32- 4-25	55	cemented
Standard, No. 5-9 Saticoy, Ventura Co.	10- 2-22	8,410	cleaning out
Bolsa Chica, No. 1-A Temescal, Ventura Co.	4- 4-18	1,390	br. sh. drilling
Associated, No. 1 Rincon, Ventura Co.	19- 4-24	375	sd. sh. drilling
Continental, No. 3 Sulphur Mountain, Ventura Co.	21- 4-22	5,730	fishing
Lockwood Oil Co., Well No. 1, Ventura Co.	28- 8-21	682	suspended
Milham Explt'n., No. 9 Buttonwillow, Kern Co.	8-28-23	4,990	br. sh. drilling
Elmer Oil Co., No. 1 Bena, Kern Co.	15-30-30	3,800	suspended
Elmer Oil Co., No. 1-A Rosedale, Kern Co.	33-29-26	5,262	hd. sd. drilling
General Pet., No. 1 Rosedale, Kern Co.	23-29-26	5,500	hd. sd. drilling
The Texas Company, No. 1 Edison, Kern Co.	23-29-29	4,245	br. sh. drilling
Symark Oil Co., No. 1 Edison, Kern Co.	24-29-29	2,130	suspended
McVey, Max, No. 1 Jasmine, Kern Co.	23-25-27	rig	rigging up
Union, No. 2 San Emidio, Kern Co.	5-10-21	3,690	redrilling
Mallery-Willard, No. 1 San Emidio, Kern Co.	9-10-23	750	hd. sd. drilling
Currency Pet. Co., No. 1 Jacalitos, Fresno Co.	28-21-14	2,810	hd. sd. drilling
Knudsen, John, No. 1 Jacalitos, Fresno Co.	14-21-14	1,350	bl. sd. drilling
Rio Grande Oil Co., No. 1 Kerman, Fresno Co.	14-13-17	4,575	sd. sh. drilling
Petroleum Securities, No. 2 Huron, Fresno Co.	28-20-16	7,200	sd. sh. drilling
Western Gulf, No. 1 Penoche Valley, Fresno Co.	26-15-12	mtl.	building rig
Union, No. 1 Huasna, San Luis Obispo Co.	34-32-15	4,158	suspended
Union, No. 1 North Huasna, San Luis Obispo Co.	12-32-14	5,125	br. sh. drilling
Midwest Refining Co., No. 1 Huasna, San Luis Obispo Co.	34-31-15	2,212	redrilling
Panorama Oil Co., Well No. 1, San Luis Obispo Co.	7-31-21	4,019	cleaning out
Paso Robles Synd., No. 1 Creston, San Luis Obispo Co.	27-27-11	3,742	suspended
Latin-American, No. 1 Shandon, San Luis Obispo Co.	31-27-15	4,010	cleaning out
Shell, No. 1 Dudley, Monterey Co.	8-22- 9	5,475	abandoning
Chessher, H. B., No. 1 Dudley, Monterey Co.	8-22- 9	245	suspended
Union, No. 1 King City, Monterey Co.	8-22- 8	2,650	br. sh. drilling
Standard, No. 1 King City, Monterey Co.	23-22- 7	3,200	hd. sd. drilling
Pacific Inland Oil Co., No. 1 Parkfield, Monterey Co.	19-23-15	50	sd. drilling
Penn Western, No. 1 Tulare Lake, Kings Co.	24-21-18	1,338	suspended
Dudley Ridge Synd., No. 1 Tulare, Kings Co.	12-23-19	1,305	gas—shut in
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,882	suspended
Porter, H. B., No. 1 Devils Den, Kings Co.	9-24-17	2,420	redrilling
Oceanside Oil Co., No. 1 Kreyenhagen, Kings Co.	32-22-16	300	suspended
Getty, George F., No. 1 Dutton, Madera Co.	18-13-16	4,550	sd. sh. drilling
Twin State Oil Co., No. 1 Soldani, Mendocino Co.	14-12- 7	1,680	gr. sd. drilling
Barnhart Trust, No. 1 Oakdale, San Joaquin Co.	3- 2-10	2,550	fishing
Inland Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	2,030	hd. sd. drilling
White, Roy, No. 1 Pixley, Tulare Co.	8-23-26	2,277	suspended
Terminal Oil Co., No. 1 Tulare, Tulare Co.	29-20-25	4,198	suspended
Terra Bella Oil Co., No. 1 Porterville, Tulare Co.	35-22-27	460	sd. drilling

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Simmel, L. G., No. 1 Inglewood, Los Angeles Co.	21- 2-14	rig	rigging up
Raleigh Oil Co., No. 1 Malibu, Los Angeles Co.	1- 2-19	2,570	sd. sh. drilling
Clearwater Oil Co., No. 1 Bellflower, Los Angeles	21- 3-12	3,040	sd. sh. drilling
Continental, No. 1 Alamitos, Los Angeles Co.	34- 4-12	5,800	hd. sd. drilling
Burlingham Pet., No. 1 Compton, Los Angeles Co.	17- 3-13	2,300	hd. sd. drilling
Consolidated Exp. Co., No. 1 Compton, Los Angeles Co.	21- 3-13	5,125	sd. sh. drilling
Hanners, George, No. 1 Watts, Los Angeles Co.	3- 3-13	3,655	suspended
Diller, W., No. 1 Watts, Los Angeles Co.	8- 3-17	1,910	sd. sh. drilling
Cal. Well Drlg. Co., No. 1 Compton, Los Angeles Co.	11- 4-13	8,500	recemented
Archer Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	5,132	set pipe
Harbor Oil Co., No. 1 Watson, Los Angeles Co.	17- 4-13	....	material
Pomona Oil Co., Well No. 1, Los Angeles Co.	32- 1- 8	1,220	to abandon
Anchor Oil Co., No. 1 Puente, Los Angeles Co.	19- 2-10	4,820	suspended
Rucker, R. C., No. 1 Puente, Los Angeles Co.	27- 2-10	3,225	sd. sh. drilling
The State Co., No. 1 Puente, Los Angeles Co.	5- 2-10	3,380	sd. sh. drilling
Keck & Hall, No. 1 Puente, Los Angeles Co.	32- 2- 8	691	testing
Los Gatos Oil Co., No. 1 El Monte, Los Angeles Co.	16- 1-11	1,615	hd. sd. drilling
Union Oil Co., No. 1 Richfield, Los Angeles Co.	13- 3- 9	2,212	br. sh. drilling
Coastline, No. 1 Devils Canyon, Los Angeles Co.	21- 5-17	2,390	gr. sd. drilling
Olympic Corp., No. 1 Calabasis, Los Angeles Co.	18- 1-17	rig	rigging up
Martin, J. W., No. 1 Newhall, Los Angeles Co.	22- 1-17	982	suspended
Consolidated Oil Co., No. 1 Newhall, Los Angeles Co.	8- 3-16	650	hd. sd. drilling
National Sec., No. 1 Newhall, Los Angeles Co.	1- 3-16	150	sd. drilling
Anderson, P. B., No. 1 Hasley Canyon, Los Angeles Co.	1- 3-16	850	sd. sh. drilling
Shell, No. 1 Bolsa, Orange Co.	18- 5-11	3,960	hd. sd. drilling
Shell, No. 1 Coyote, Orange Co.	28- 3-10	6,050	redrilling
Standard, No. 1 Coyote, Bastanchury, Orange Co.	21- 3-10	3,550	sd. sh. drilling
Union, No. 1 Coyote Sansinina, Orange Co.	30- 2-10	1,675	br. sh. drilling
Beard, G. F., No. 1 Brea Canyon, Orange Co.	30- 2- 9	1,199	redrilling
Western Gulf, No. 1 Brea Canyon, Orange Co.	28- 2- 9	625	br. sh. drilling
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	3,950	testing
Oil Well Eng. Co., No. 1 Newport, Orange Co.	21- 6-10	2,795	suspended
Hall Pet. Co., No. 1-A Murrietta, Riverside Co.	23- 7- 3	701	cemented
Hemet Pet. Co., No. 1 Ward, Riverside Co.	9- 5- 1	3,403	suspended
Imperial Valley Oil Co., Well No. 1, Imperial Co.	32-11-10	2,980	suspended
Turner, S. S., No. 1 Escondido, San Diego Co.	25-12- 2	3,005	sd. sh. drilling
McGregor Synd., No. 1 Del Mar, San Diego Co.	17-14- 3	1,120	redrilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	X-13- 4	1,875	sd. sh. drilling
Grey, H. H., No. 1 Redlands, San Bernardino Co.	25- 1- 2	2,525	hd. sd. drilling
Duncan, N. I., No. 1 Mojave, San Bernardino Co.	8- 4- 6	rig	rigging up
Girard & Grimes, No. 1 Corona, San Bernardino Co.	8- 2- 8	mtl.	building rig

Permian Basin Production Is Down

Falling Off in Crude Shipments From That Area. Andrews County's Test Shut In. University Regents Receive Protest

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Dec. 28.—The Permian Basin slumped both in production and distribution during the past week, the production falling off from 347,717 bbls. to 342,132 bbls., a drop of 5,585 bbls. Crane County was the greatest factor in this drop, accounting for 2,125 bbls. of the amount. Howard-Glasscock Counties accounting for 1,182 bbls.; Pecos County for only 505 bbls. and Winkler County falling off 1,513 bbls. Some of the other pools in the district gained a slight amount.

Distribution fell off more than 25,000 bbls, pipe line shipments causing practically the whole decrease, while tank car shipments increased a little over 300 bbls., refinery runs to, decreased only 100 bbls. Total shipments ran 348,675 bbls., whereas during the previous seven day period it was 373,901 bbls. daily average. Production was about 26,000 bbls. under distribution. Several of the main trunk lines out of the district have been running practically to capacity, while a few others have not. Many of the refineries in the district have not been running to capacity.

Deep Rock Oil Co.'s No. 1 Ogden, Section 6, Block A-46, Andrews County, stands at the same depth, 4,428 feet, but the gas appears to be increasing, also the oil, while the water is decreasing, according to late tests made. In 12 hours on Sunday the well flowed 135 bbls. by heads, the heads coming at intervals of every three hours, and the flows running from 20 to 50 bbls. each head, the heads fluctuating in size. Rods and tubing are to be run and a test made on the pump, before anything definite is decided as to deepening or completing it at the present depth. Another week should give the "low down" as to its value on the pump, and many anxious operators and company men will be watching the pumping test quite closely. Future plays in northern Ector, Andrews and Gaines are practically hinging on this test, and if it proves out a good pumper, added intensity will probably be noticed in lease buying and wildcatting in these counties.

Acreage Deals in Andrews

There have been some deals made on nearby acreage, the prices running as high as $125 per acre, but as most of the acreage is held by major companies, there is but little acreage to change hands until the University holds its sale of lands on the 21st, selling lands which lie a mile to the north. Many are of the opinion that bids will be rather low on this land, many of the operators and companies not even bidding on it due to the one-sixth oil royalty clause in the contracts, and also $1 rentals. The latter does not make so much difference, but the change from an eighth royalty, as in the past, to a sixth royalty on new contracts rather has the effect of slowing up bids on the University Lands.

Landreth Has a Protest

In a letter to the board of regents of the University of Texas, E. A. Landreth, president of the Landreth Production Co. of Fort Worth, Tex., states that he believes that the one-sixth royalty imposes a prohibitive handicap upon the oil producer in West Texas, and cites figures on total recovery coupled with drilling costs. Leasing out of small tracts was also denounced by Mr. Landreth in his letter. Small tracts do not seem to fit in in the present plans for curtailment of drilling activities and proration of production of pools, neither do they allow the operator the greatest chance to earn a tenable profit, but it seems that the board of regents is changing to a general policy of one-sixth royalty on crude oil production, and to smaller tracts. Other operators and companies will no doubt acquiesce in Mr. Landreth's statements and beliefs, and sales made by the board of regents may later suffer because of the concurrence of operators and companies operating and leasing in West Texas. University Lands may be sidestepped wherever there is a chance, and leases on private lands raise in value because of the new policy. The purchase of University Lands in Andrews County on December 21 may not be a criterion by which to judge future sales and purchases, but it is felt that sales on those lands may suffer because of the new royalty price.

Interesting Well in Ector

To the south of Andrews and the Deep Rock discovery, in the new area of Ector County, southeast of Judkins, the second well is almost due for completion. Casing is now being run to 3,470 feet and as soon as that job is completed drilling will be resumed. Three hundred more feet should see this test near the pay horizon of the discovery well, which topped the pay from 3,715-25 feet. Total depth of that hole is 3,725 feet. This second test is checking practically the same as the discovery. The Penn Oil Co. and Humble Oil and Refining Co. brought in the discovery and are drilling the south offset, this second well. The discovery well is in Section 7, and the second test is in Section 16, Block 44, T. & P. Survey.

Landreth Production Co.'s No. 1-S in Section 2, Block 35, to the east of the discovery well of this new pool, topped the salt at 1,080 feet with a surface elevation of 2,894 feet, and if the salt can be depended upon as a marker this well may be running approximately 130 feet higher structurally than the Penn-Humble discovery. This may indicate a high lime in the Landreth well, and the area between the Penn-Humble and Connell producers representing a "high."

Cranfill & Reynolds' No. 1 Masterson in Section 104, Block 10, H.&G.N. Survey, Pecos County, is averaging about 30 bbls. per day on the pump. Total depth is 1,495 feet. Before deepening to the present total depth the well was averaging around 20 bbls. flowing by heads, but an increase in pay was presumably encountered when deepened and the pump brought out the full value of the well. The oil is going to storage for there is no pipe line in the vicinity of the well. Possibly a line will be run to the Orient, about 5½ miles to the south, and a loading rack built for shipping the crude out via tank car. This seems to be the only recourse, at present, for marketing the production.

In the Shipley Pool, Ward County, the Shell Petroleum Corp.'s No. 1 Owens, Section 16, Block 5, swabbed 310 bbls. of oil in the 24 hours ending at 7 a.m., Sunday. In the next 24 hours it filled up 2,000 feet with oil, making this test appear much better at its present total depth of 3,074 feet. These are the best indications that the well has had for a good producer, so far, and it looks as if the pays encountered below the regular Shipley pay horizon would yield about the same caliber wells as those producing from the first pay horizon. When the wells play out in the first pay horizon they will probably all be drilled deeper to test the deeper horizons and seek commercial producers in those pays.

Watching Irion County Test

In Irion County the Kingwood Oil Co. is shooting its No. 1 Sugg in Section 10, Block 1, H.&T.C. Survey, around 7,560 feet. It previously had a good oil showing from 7,656-75 feet and when the well encountered sulphur water at 7,818 feet it was decided to plug back and shoot the higher pay. Probably the best pay was at 3,368 feet, where the well swabbed better than 40 bbls. of 35.8 gravity oil.

The well was given two small shots from 7,656-75 feet Saturday, but they had no results, consequently several larger shots are contemplated. These to be set off at the same depths to try to produce the well from the pay found at 7,656 feet.

The Barnett No. 1 Callan in Section 1, B.S.&F. Survey, Menard County, may be completed as a gasser at the present total depth of 1,268 feet where it encountered an estimated 3,000,000 feet of sweet gas. This test had a 10-bbl. showing of oil at 1,132 feet, but drilled on through the oil-bearing sand, and later topped a gas sand, from which it is now producing. Other tests will no doubt be drilled following the showings made in this and the other Barnett test in Section 22.

Offset locations have been staked around Glasscock Brothers and others' No. 1 Edwards, the 3-mile extension well of the Howard-Glasscock County Pools. This well is located in the SE of Section 18, Block 33, Township 2s, T.&P. Survey, Glasscock County, and produced 156 bbls. oil, 5 per cent water, in the 24 hours ending 7 a.m. December 25. The Penn Oil Co., Humble Oil & Refining Co. and Julian Oil Corp. are the companies which have staked offset locations to test their properties.

The new discovery of Adams, Ferguson and Hobbs, on the Lowe farm, Taylor County, 4 miles south of the Dunnigan and Shell Petroleum Corp.'s No. 1 Daivdson, in the Guadalupe County School Lands, was drilled 5 feet deeper to a total depth of 2,389 feet and flowed 67 bbls. over Sunday night, making the appearance of this discovery brighter than before. It was previously standing shut down at 2,384 feet with 2,000 feet of oil in the hole from pay topped at 2,383 feet. This amount of oil filled up in 12 hours while the well was standing.

With the Dunnigan and Shell discovery producing commercially, and this new discovery showing as a commercial producer it now looks as if Taylor County could really be classed with the other producing counties of West Texas, and may take its place among the major areas. The oil being sweet and of high gravity makes the new discoveries more valuable, and an incentive for drilling nearby tests, and proving up these areas as soon as a market can be obtained for the oil. The 2-inch line from the Dunnigan well to a point on the Texas & Pacific Railroad will serve the first discovery and its immediate pool, and this line may be extended 4 miles south to take the production from the second discovery. However, this is merely a conjecture, and some other means may be

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WILDCAT OPERATIONS IN WEST TEXAS

Week Ended December 23

Company, farm and location—	Remarks—
ANDREWS COUNTY	
Deep Rock's No. 1 Ogden, 3,310 ft. E, 330 ft. S, Sec. 6, Blk. A-46, Public School Land	Top pay 4,345 ft.; top lime 4,050 ft.; drilled deeper to 4,428 ft.; encountered 300 ft. sulphur water; will probably be plugged back to shut off water; flowed 109 bbls. over night Dec. 26; o l badly cut; swabbing.
BORDEN COUNTY	
Teas & Wheeler's No. 1 Long, 1,320 ft. N and E of Sec. 27, Blk. 30, T.&P. Sur.	Top salt 1,080 ft.; shut down 3,992 ft.
BREWSTER COUNTY	
E. W. Bateman et al's No. 2 Nevill, 2,000 ft. S and W line of Sec. 62, Blk. 13, G.H.&S.A.R.R. Sur.	Shut down 2,612 ft.
Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor., Sec. 45, Blk. G-15, G.C.&S.F. Sur.	Shut down 1,935 ft.
Forrest Oil Co.'s No. 1 Skinner, C SW SE, Sec. 100, Blk. 2, G.C.&S.F. Sur.	Drlg. 900 ft.
Grastorf et al's No. 1 Redfield, 920 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.&S.F.R.R. Sur.	Shut down 320 ft.
Van McPhail's No. 1 McIntyre, SE cor., Sec. 59, Blk. 352, 7 mi. S of Alpine	Shut down 1,740 ft.
COKE COUNTY	
Lipan Oil Co.'s No. 1 E. C. Rawlings, Sec. 390, Blk. 1-A, H.&T.C. Sur., elev. 2,750 ft.	Shut down 2,892 ft.
Mid-Kansas Oil Co.'s No. 1 W. E. Lackey, 330 ft. N and E of SW cor., Sec. 272, Blk. 1-A, H.&T.C. Sur.	Pay 3,755-56 ft.; 6⅝-in. casing set at 3,451 ft.; underreaming at 4,053 ft.; total depth 4,255 ft.; plugged back to 3,770 ft.
CONCHO COUNTY	
Duffy et al's No. 1 Callan, 1,520 ft. N and 1,120 ft. W of SE cor., Sec. 21, Blk. 10, H.&T.C.R.R. Sur.	Spudded and shut down.
Turner et al's No. 1 Borsig, 150 ft. from S of SE cor., G. Emmig Sur. 130, 6 mi. W of Paint Rock	Shut down 735 ft.
CRANE COUNTY	
Church & Field's No. 5 University-Duall, 990 ft. from W, 1,650 ft. from S, Sec. 39, Blk. 30	Spudding 100 ft.
Church-Weekly's No. 1 University, Sec. 34, Blk. 30, 2,310 ft. from N and E, University Land	Drlg. 995 ft.
Duffey et al's No. 7 Cowden Bros., 1,320 ft. from S and 1,420 ft. from E of Sec. 18, Blk. X, C.C.S.D.&R.G. N.G.R.R. Sur.	Shut down.
Humble Oil & Ref. Co.'s No. 1-E University, 2,310 ft. from N and 930 ft. from E, Sec. 40, Blk. 30, University Land	Drlg. 440 ft.
Simms and Atlantic's No. 1 University, 2,310 ft. from N, 990 ft. E, Sec. 39, Blk. 30, University Land	Material.
Tidal Oil Co.'s No. 3 University-E, 330 ft. N and E of SW cor. E half of NW, Sec. 39, Blk. 30, University Land	Top salt 1,050 ft.; drlg. 2,345 ft.
Warner-Quinlan Co.'s No. 6 University, 330 ft. S and E of NW of E half of SW, Sec. 39, Blk. 30, University Land	Top salt 1,065 ft.; drlg. 2,865 ft.; show oil 2,845 ft.
Warner-Quinlan Co.'s No. 7 University, 990 ft. S and 330 ft. E of NW of E half SW, Sec. 39, Blk. 30, University Land	Drlg. 1,275 ft.

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Percentage Proration in Gray County

Operators Agree to Curtail 20 Per Cent or More as Overproduction Situation Was Becoming Serious. Extension in Coleman

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Dec. 30.—The greatest feature of the Panhandle district this week was the meeting of representatives of oil companies, individuals and operators in Gray County to discuss proration of that area. As a result of the meeting at Pampa, held December 27, a large majority of these representatives voted for a 20 per cent proration, and more if need be, in order to comply with pipe line demands in the flush areas in the Bowers and Finley-Brown Pools in Block B-2, where many, and large wells have brought the daily average production peak up to as high as 103,000 bbls. The past week's production was slightly above 73,000 bbls., it having been raised several thousand barrels above the previous week's average by several large new wells. It is understood that a few operators and companies did not favor the 20 per cent proration plan. One reason for the disagreement was because proration was to cover flowing wells only, and not the pumpers which are now producing, and others which might be completed and put on the pump. J. L. McMahon of The Texas Company, Wichita Falls, Tex., E. B. McFarlin, of the McMan Oil & Gas Co., Tulsa, and J. S. Dewar of the Phillips Petroleum Co., made up the committee which was authorized to prepare the proration plan.

Heretofore Gray County operators have had a voluntary plan for shutting down wells on top of the pay in order to curtail developments and keep down production as low as possible, and this plan worked favorably for several weeks, but proration was inevitable as the price of crude in this area seemed doomed for a cut if production could not be curtailed still more, therefore the meeting held this week to discuss proration plans. Some of the producers have been selling below the posted price in order to move their oil, but it is believed that the new plan will enable practically all to obtain pipe line connections. The five main purchasers in the county are: The Texas Company, Prairie Oil & Gas Co., Humble Pipe Line Co., Pampa Pipe Line Co., and Toronto Pipe Line Co. They have nominated taking around 35,000 bbls. daily in January. The Gulf Production Co. and Magnolia Petroleum Co. limit their pipe line runs to their own production.

In Western Gray County

One of the most interesting spots in Gray County for the past few weeks has been Dillard and others' No. 1 Furneaux Brothers (Independent Oil & Gas Co.'s No. 1 Wilson), NE cor. SE, Section 202, Block B-2, H.&G.N. Survey, on the extreme western side of the county. It picked up the first pay at 3,063 feet and gained an increase from 3,175-80 feet, spraying 20 bbls. of oil daily with approximately 7,000,000 feet of gas. It is now drilling below 3,290 feet with apparently no further increase from lower pays, but is increasing in oil from the pay found at 3,175-80 feet as 35 bbls. were recovered in the last 15 hours. Another test is located 2 miles east in the NE cor., Section 170, and another by Dillard and others is drilling in the NW cor. SE, Section 200, 2 miles south. These two new tests will give an idea as to the possibilities of this new area in Gray County which might later have to be placed under the proration plan.

In the new area of Archer County, opened a few weeks ago, the Pandem Oil Co. completed its No. 2-D J. A. Young for a 140-bbl. well, producing 15 bbls. of water. Oil sand in this producer was found at 1,406-16 feet and the hole bottomed at a latter depth. This is in Section 2,426, T.E.&L. Survey, in the southeastern corner of the county. Duke, Porter and Oakes opened up this new area with a 200-bbl. producer around November 12.

New Producing Spot in Palo Pinto

Prairie Oil & Gas Co. and Amerada Petroleum Corp.'s No. 1 Vick in the N half of the L. J. Pitts Survey, in northwestern Palo Pinto County, is still waiting for pipe line connections to be made by the Prairie Pipe Line Co. Top of the pay in this well is 1,557 feet, and total depth is 1,560 feet. It flowed 64 bbls. of oil on December 24, proving that it is a commercial producer from the Strawn sand. The gravity is high and the oil is "sweet." Approximately 7½ miles of line had to be laid to this well.

The Roberts Oil Corp.'s No. 1 George Rae, located 4,110 feet from the east and 990 feet from the south lines of the J. B. Beall Survey in Coleman County, is now resetting casing after water broke in behind the 8¼-inch pipe. This test had an oil sand at 2,150-56 feet and another sand at 2,180-82 feet, and on a swabbing test made 40 bbls. of oil in 24 hours before the water broke in behind the casing. This is the second well showing as a producer in that area, and although there are three dry holes in the vicinity of the producers, it looks as if there would be a pool opened here, although it may be a small one.

Extension in Coleman County

In the Overall area of Coleman County, the Atlantic Oil Producing Co.'s No. 1 Overall has 800 feet of oil in the hole from sand 2,160-68 feet. This well is approximately 1,000 feet southwest of nearest production in the pool and looks as if it would be a considerable extension. The Fry sand is producing most of the oil in the Overall Pool and the sand found in this test is the Fry.

An interesting test for the city of Coleman is now being drilled on the J. W. Mead farm by Donnelly and others. It is located only 500 feet south of the city limits in the Samuel Crooks Survey No. 736, on a block assembled by Frank Taylor, Clyde Ransberger and Johnnie Foster, and may possibly be the opener of a pool just outside the city.

Many drilling wells have been shut down during the holidays, but activities will soon start and be traveling at full speed again, the new year having a long hard schedule to fill if it contemplates discovering as many wildcats and opening as many new pools as the year of 1929 has opened for the oil industry in Texas.

Palo Pinto Test

The new discovery of the Prairie Oil & Gas Co. and the Amerada Petroleum Corp. on the Vick farm in the L. J. Pitts Survey, northwestern corner of Palo Pinto County, is testing. The Prairie's gathering line is now connected with the well and is ready to run the oil. The well had been flowing 70 bbls. naturally, every other day, making an average of around 35 bbls. per day, and due to the oil's high gravity at the depth of 1,556 feet this will be classed as a fair sized discovery in this area. It is producing from the Strawn sand.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending December 23

Company, well, farm, name, section and block—	Remarks—
CARSON COUNTY	
Champlin Ref. Co.'s No. 5 McConnell, 990 from S line and 330 ft. from W line of N 120 acres of NW Sec. 67, Blk. 4, I.&G.N. Sur.	Location.
Continental Oil Co.'s No. 2 Block, 990 ft. from N, 330 ft. from E, SE. Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 2,398 ft.
Danciger O. & R. Co.'s No. 1 Block, 330 ft. from N and E lines, Sec. 112, Blk. 4, I.&G.N. Sur.	S.D. 2,851 ft.
Delmar Oil Co.'s No. 5 Noel, 330 ft. S and W, NE cor. W½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	S.G. 3,000-10 ft; S.D. 3,131 ft.
Empire G. & F. Co.'s No. 1 Fields, 1,650 ft. from N and E, Sec. 13, Blk. 7, I.&G.N. Sur.	Drlg. 1,255 ft.
Empire G. & F. Co.'s No. 2 Deahl, 660 ft. N and E, SW, Sec. 3, Blk. 5, B.&B. Sur.	Fishing 2,483 ft.
Empire G. & F. Co.'s No. 1 Thorp, C NW, Sec. 26, Blk. T, A.B.&M. Sur.	Drlg. 1,100 ft.
Ham Oil Co.'s No. 1 Cooper, 330 ft. from S and W, E½ NE, Sec. 5, Blk. 9, H.&G.N.R.R. Sur.	S. D. 2,598 ft.
Herragan Oil Co.'s No. 1-A McConnell, 330 ft. from N and W, W½ SW, Sec. 187, Blk. 3, I.&G.N.R.R. Sur.	Drlg. 2,475 ft.
S. D. McElroy's No. 1 Block, 330 ft. from N and E, NE NW, Sec. 112, Blk. 4, I.&G.N.R.R. Sur.	Drlg. 2,850 ft.
McMan O. & G. Co.'s No. 1 McConnell, 330 ft. from N and E, E½ SW, Sec. 187, Blk. 3, I.&G.N.R.R. Sur.	Drlg. 3,080 ft.
Osborne et als' No. 3 Percival, 330 ft. N and W, SE cor. E½ NE, Sec. 199, Blk. 3, I.&G.N.R.R. Sur.	Location.
Pansota Oil Co.'s No. 1 Block, 330 ft. S and W, NE cor. SW, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	Spudding.
Phillips Pet. Co.'s No. 1 Garner, 330 ft. N and E, SW cor. SW, Sec. 114, Blk. 4, I.&G.N. Sur.	S.D. 2,940 ft.
Prairie O. & G. Co.'s No. 2 Nail, 330 ft. from N and W lines, N½ E½ SE, Sec. 198, Blk. 3, I.&G.N. Sur.	10,000,000 ft. gas 2,830-2,985 ft; S.D. 3,112 ft.
Red River Gas Co.'s No. 3 Lee Bivins-A, C SE SE, Sec. 43, Blk. M-20, G.&M.R.R. Sur.	S.D. 1,540 ft.
Ryan Cons. Oil Co.'s No. 7 Block, 330 ft. N, 990 ft. W, SE cor. NE, Sec. 111, Blk. 4, I.&G.N.R.R. Sur.	Cleaning out 1,080 ft.
Shell Pet. Corp.'s No. 1 Percival, 330 ft. from N and E, SE, Sec. 199, Blk. 3, I.&G.N. Sur.	Rig.
Skelly Oil Co.'s No. 19 Schafer, 330 ft. N, 990 ft. E, SW cor. NE, Sec. 198, Blk. 3, I.&G.N. Sur.	6,000,000 ft. gas 2,895-2,970 ft; S. D. 3,100 ft.
Skelly Oil Co.'s No. 20 Schafer, 330 ft. N, 990 ft. W, SE cor. N½, Sec. 198, Blk. 3, I.&G.N. Sur.	S.D. 3,090 ft.
The Texas Co.'s No. 3 Noel, 330 ft. N and W, SE cor. NW, Sec. 187, Blk. 3, I.&G.N.R.R. Sur.	Set 8-in. casing 2,355 ft.
The Texas Co.'s No. 3 Quinn, 330 ft. N, 990 ft. E, SW cor. E½, Sec. 7, Blk. 9, I.&G.N.R.R. Sur.	Drlg. 2,395 ft.
CASTRO COUNTY	
Colorado O. & R. Co.'s No. 1 M. Slemmons, SW cor., Sec. 73, Blk. M-17, B.S.&F. Sur.	Rig blown down.
Mystery Oil Co.'s No. 1 J. I. Crum, SE cor. NE, Sec. 333, Blk. M-6, S.K.&K. Sur.	S.D. 510 ft. for csg.
CHILDRESS COUNTY	
Continental Oil Co. and Sun Oil Co.'s No. 1 Johnson, 660 ft. from NE of Sec. 580, Blk. H, W.&N.W. Sur.	Cellar.
C. L. Sloane et als' No. 1 B. P. Smith, Sur. 49, F. P. Knott lands	S.D. 4,675 ft.
COCHRAN COUNTY	
Westbrook et als' No. 1 Slaughter, 400 ft. from S and E, Labour 67, League 118, Knox Co. School lands	Set 8-in. csg. 2,771 ft.
DONLEY COUNTY	
Blue Bonnett Oil Co.'s No. 1 Ball, 1,075 ft. from N line, 985 ft. from E line, Sec. 22, Blk. E, D.&P.R.R. Sur.	T.D. 3,006 ft; contract depth.
Marine Oil Co.'s No. 1 Sawyer, C SW, Sec. 5, Blk. G, G.C.&S.F. Sur.	S.D. 3,200 ft.
Southland Oil Co.'s No. 1 Lewis, C SE 40 ac., Sec. 3, Blk. 29, H.&G.N.R.R. Sur.	T.D. 3,005 ft; temp. abd.
GRAY COUNTY	
Adams Oil Co.'s No. 4 Morse, 330 ft. S and W, NE cor. Sec. 3, Blk. 26, H.&G.N.R.R. Sur.	S.D. 2,495 ft; S.O.
Alexander and Shell Pet. Corp.'s No. 1 Harrah-McKinney, 330 ft. S and W, NE cor. E½ SE, Sec. 163, Blk. 3, I.&G.N.R.R. Sur.	S.G. 3,065 ft; T.D. 3,160 ft; 1,000 ft. oil in hole; 5,000,000 ft gas; T.D. 3,135 ft.; waiting for pipe line connections.
British-American Oil Co.'s No. 2 Purviance, 330 ft. N and E, SW cor. E 160 ac., Sec. 61, Blk. B-2, H.& G.N.R.R. Sur.	Temporarily abandoned.

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NORTH TEXAS PRODUCTION
Week ending December 28

Panhandle District—	Prod.
Carson County	9,188
Hutchinson County	26,328
Gray County	65,794
Moore County	675
Potter County	....
Wheeler County	611
Total	102,596
Wichita District—	
Archer County	18,027
Baylor County	180
Clay County	848
Cooke County	6,445
Foard County	165
Jack County	4,195
Haskell County	90
Montague County	6,390
Throckmorton County	....
Wilbarger County	30,014
Young County	7,156
Wichita County	24,707
Total	98,217
Ranger District—	
Brown County	9,319
Callahan County	2,825
Coleman County	6,650
Comanche County	1,140
Palo Pinto County	520
Eastland County	4,985
Shackelford County	9,272
Stephens County	6,015
Total	40,726
Grand total this week	241,539
Grand total last week	250,553

WICHITA FALLS COMPLETIONS
Week ending December 28

Archer County

Burns & Long's No. 10 Ferguson was dry and abandoned at 1,757 feet. W. R. Duke's No. 1 Harmel was dry and abandoned at 1,500 feet. Pandem Oil Corp.'s No. 2 Young had an initial production of 140 bbls. oil and 15 bbls. water at 1,406-16 feet.

Clay County

F. L. A. Hamilton and others' No. 2 Wade was dry and abandoned at 1,577 feet.

Montague County

Continental Oil Co.'s No. 27 Howard had an initial production of 20 bbls. at 1,005-1,126 feet.

Young County

Lowery and others' No. 3 Atchley was dry and abandoned at 810 feet. Madden and others' No. 1 Winkler was dry and abandoned at 1,275 feet. Perkins

(Continued on Page 104)

Pipe Line Construction News

MORE STEEL ACTIVITY AFTER FIRST OF YEAR

By B. E. V. Luty

PITTSBURGH, Pa., Dec. 30.—Christmas is always strictly observed in the steel industry as a holiday, but with it coming in the middle of the week some departments took the whole week off. Thus an estimate of the rate at which the steel industry operated last week would not be illuminating even if it could be made closely. In a general way it may be said that steel production during the entire month of December was at not over about 60 per cent, measured in steel ingots, against 69 per cent officially reported for November, 85 per cent for October and 100 per cent for last May, the peak month.

Buying for prompt shipment has been the rule in steel for over six years, replacing the old style of forward buying. Prompt buying has been pursued with increasing rigidity except for short spells like that of last spring. In the past month there has been the special influence of the impending January 1 inventory.

The recent and current volume of buying, which has been decidedly light, is no criterion as to the future, except that one might expect a good bit of contracting for the first quarter, also the placing of shipping orders for release after January 1, and both of these have been unusually light.

Week by week for several weeks steel producers have been reporting a better tone in the market, at the same time being unable to assert that this was exemplified by better buying. Apparently it is a case of partial recovery from the scare buyers experienced on account of the stock market collapse. It is now said that consuming prospects for the new year are quite fair. There can scarcely be any doubt that there will be the usual seasonal influence towards more activity after January 1.

President Farrell of the Steel Corp. has just issued a statement including reiteration of a statement he made recently, that there is no reason apparent why 1930 should not be "a good average year," referring particularly to tonnage, while he also predicts "stable prices and stable wages."

It is not difficult to interpret specifically what is meant by a good average year. That would not be a duplication of the better part of this year, or even of the whole year, nor even perhaps a duplication of 1928, for it was somewhat exceptional. The average has been distinctly below these two years, but of course some allowance should be made for annual growth. In the main, steel production after the war and prior to 1929 was gaining at about 2 to 3 per cent a year. With 1926 a record year and 1927 slightly off the mean of the two years could be taken as average for that time and allowing for increase next year would show a steel ingot production of 49,000,000 to 50,000,000 tons if it is to be a good average year. That would be about 10 per cent under 1929 and a trifle under 1928.

Pipe and tube mills are off and on from week to week but in general have hardly averaged a 50 per cent operation.

Finished steel prices are quite steady all along the line. There may be some little irregularity in standard or merchant pipe in the secondary market in a few sections, but pipe mills express themselves as very well satisfied with the price situation. Sheets are steady, being no weaker than they were. In fact, there has been a little talk of the possibility of black sheets advancing, and as a result a few consumers placed contracts for first quarter, to protect themselves.

KEEPING CRUDE OIL FLOWING IN CONTINENTAL OIL CO. LINES

By Harry Moreland

Manager Pipe Line Department, Continental Oil Co.*

While there is no opposition on the part of teamsters and railroads to pipe line construction at this time, other items constitute problems of no less magnitude. Our producing department cannot choose as to where oil wells will be discovered, but must drill where they believe there is the most likelihood of securing production. As a consequence, wells are drilled in seemingly impossible locations, often miles from a railroad, and in the roughest and most desolate country. Upon such a drilling well being brought in as a producer, the disposition of the production falls upon the pipe line department.

While the well has been drilling, information has been secured as to the location of pipe lines and the need of additional crude for our refineries. If our crude stocks are sufficient for the plant's needs, then arrangements are made for some other company to run and purchase the probable production. If the oil is needed by our refineries, decision must be made as to the size of the line we will build, and the type of pumping equipment to be installed at the receiving station. If it is a wildcat well, located 75 or 100 miles away from our line and no other company's lines are near, the usual procedure is to lay a small line to the railroad and ship the production by tank car, until the offset wells come in and some idea is obtained as to the probable daily production of the new field.

Should it be decided to lay a line, engineers survey the route; bids for the laying, ditching, stringing, painting and backfilling are secured, and the contract let for construction. This last is a problem in itself, in that the line may go under rivers and over mountains, through deserts and through swamps. It may be necessary to blast a ditch through solid rock, or the soil may be so soggy after a rain that it becomes necessary to drag the pipe to location, a joint at a time, with a team. The weather may be below zero and the ground frozen so hard that it breaks the jaws of the ditching machines, or the temperature may be so hot in the summer time that it is almost impossible for the men to handle the pipe and tools. But, regardless of the soil and weather conditions, construction must proceed rapidly, in order that the new well may be allowed to pour forth its production without an uneconomical interruption, and our refineries supplied with crude oil without delay.

The principal construction by Continental's pipe line department in 1929, was a combination 6 and 8-inch line extension from the Rainbow Bend Pool in southern Kansas, a distance of 50 miles to the Valley Center and Goodrich Pools, about 6 miles north of Wichita. There the company owns a half interest in a majority of the producing lease in the Valley Center Pool and a full interest in the Goodrich Pool. A total of 2,868,492 bbls. was pumped through the line the first 10 months of this year.

In addition to the usual handling of oil through its line from the lease tanks the pipe line department must also keep separate certain types of crude from our main line stream in order to deliver without mixture the particular crude oil from which the Ponca City refinery manufactures Conoco germ processed motor oil. This separation is accomplished by either the laying of parallel lines or by batching through one line. A loop of 9½ miles was constructed the past summer for this purpose.

Continental's pipe line system totals 1,367 miles.

In Oklahoma and Kansas, to serve our Ponca City and Sapulpa refineries, we have 298 miles of main line consisting of 4, 6, 8 and 10-inch pipe, and 216 miles of gathering line. Our Wichita

(Continued on Page 104)

*From Conoco Magazine.

COMPLETES 136 MILES OF GAS LINES IN TEXAS

SHREVEPORT, La., Dec. 30.—Ark-La. Pipe Line Co. (Arkansas Natural Gas Corp.) has completed and placed in service 136 miles of 8 and 6-inch line, 8-inch main and 6-inch laterals, to 12 towns in the northeast corner of Texas in which Southern Cities Distributing Co., retailing subsidiary, holds the franchise. Fifty miles of the line is 8-inch, branching off from the Shreveport-Little Rock 18-inch line at Rogers station a few miles north of Oil City, La., and following a route that takes it about midway between the towns to be served by laterals a few miles in length. The towns served at present are Pittsburg, the western terminal of the main line, Mount Vernon, Mount Pleasant, Jacksonville, Avinger, Linden, Gilmer, Hughes Springs, Omaha, Daingerfield, Winnsboro and Naples. Later franchises may be sought in other communities. The same company completed 25 miles of 6-inch line from Camden to Fordyce, Ark., some time ago.

Mississippi River Fuel Corp.'s 22-inch line from the Richland and Monroe gas fields to St. Louis, was completed about the middle of November and gas reached the city and was turned on in the Scullin Steel Co.'s plant November 21. Other connections in the St. Louis industrial district include East St. Louis, Alton and Granite City but only about half of its capacity of 100,000,000 feet is being taken at present. In honor of the inauguration of service the Industrial Club of the St. Louis Chamber of Commerce gave a dinner to the officers and directors of the pipe line company at the Chase Hotel this month at which over 400 business men of the St. Louis district were present.

ACQUIRES PIPE LINE

The Hope Natural Gas Co. of Pittsburgh, Pa., has acquired control of the Godfrey L. Cabot, Inc., properties in and near Salem, W. Va. The transaction involves the Salem, W. Va., gas franchise and the Salem Gasoline Co. This transfer of ownership includes about 65 producing oil and gas wells located in Harrison and Doddridge Counties. More than 100 miles of pipe line changes hands.

KANSAS PIPE LINE AND GAS

TOPEKA, Kans., Dec. 30.—The Kansas Pipe Line & Gas Co. of Topeka has applied to the public service commission for authority to issue $1,900,000 of its common stock to be divided into 19,000 shares of a value of $100 each. The company also applied for authority to issue $2,500,000 of unsecured notes to be date January 1, 1930, and to become due January 1, 1935. The notes were to yield 7 per cent interest.

OHIO OIL COMPANY'S UTAH GAS EXTENSIONS

Ohio Oil Co. has contracted to furnish natural gas as fuel for operations at American Smelting & Refining Co.'s smelter at Murray, a surburb of Salt Lake City, Utah, and at its Garfield smelter on the shore of Great Salt Lake. Garfield smelter treats mainly concentrates from Utah Copper Co.

City commissioners of Provo, largest Utah city south of Salt Lake City, having voted Ohio Oil Co. a 50-year franchise for distribution of natural gas in their community, Ohio Oil officials are negotiating for purchase of Utah Valley Gas Co., a Foshay subsidiary, now supplying the Provo area with artificial gas.

As soon as required franchises in other Utah County towns have been secured, Ohio Oil Co. will proceed with extension of its gas mains from Sandy, 15 miles south of this city, into Provo district.

The Public Utilities Commission of Idaho has postponed hearing scheduled for December 12 on application of Ohio Oil Co. for permission to supply natural gas to Pocatello, Malad and other southern Idaho towns and communities.

Ohio Oil is now supplying Salt Lake City, Ogden and other Utah cities with natural gas piped from Baxter Basin oil fields of Wyoming, and proposes, if the permission is granted by the Utilities Commission, to extend its trunk line north from Ogden, through Box Elder and Cache Counties in Utah, supplying a number of important towns enroute, into Pocatello.

MONTANA DEVELOPMENT

The Gas Development Co., formed in 1926 by the interests that control the Montana-Dakota Power Co., owns natural gas acreage and operates producing wells. A contract has been entered into with this company for the purchase of gas, and the Montana-Dakota Power Co. has recently completed the building of about 162 miles of pipe lines extending from the wells to Miles City, Glendive and Terry, in Montana, and to Marmarth, North Dakota, where the natural gas is sold at retail. A subsidiary company supplies artifical gas to Bismarck, Valley City, and Mandan, North Dakota, from properties operated under lease. The gas reserves of the Gas Development Co. are reported to have been estimated to have a life of more than 40 years. Early in 1928 the controlling interests behind the Montana-Dakota Power Co. formed the Black Hills Utilities Co. to construct a pipe line from the gas fields to the towns in the Black Hills district about 200 miles distant. The company also plans to extend its high pressure lines to Williston, South Dakota, to supply a retail gas service.

The county commissioners of Valley County met the past week to consider the petition of the Montana-Dakota Power Co. to lay service mains for natural gas in the streets of Hinsdale. The commissioners gave the company the required permission and within ten minutes after the permit was issued, the company had 25 men at work opening trenches for the pipe. Hinsdale is not an incorporated city, so the county commissioners have authority there.

NEW PUMPNG UNITS

WICHITA FALLS, Tex., Dec. 30.—Three new pumping units are to be built by the Texas Pipe Line Co. on its main lines from the Panhandle oil fields to Bridgeport in Wise County. Work already has been started on an electrically equipped station at Kirkland and the other two stations will be located at Jolly and 11 miles east of Bellevue.

MAGNETOMETER STUDY OF ALABAMA AREA

(Continued from Page 37)

2. Woodville, Jackson County.
3. Talladega, Talladega County.
4. Wetumpka, Elmore County.
5. Livingston, Sumpter County.
6. Georgiana, Butler County.

It should be remembered that the object of these articles is not to present a detailed study of the different states but merely to act as a guide for magnetometer work. Just as the regional geological map shows only the regional features so these maps also are for the purpose of showing only the regional magnetometer features.

In many instances the author has been able to check in detail some of the areas pointed out as favorable in the other states already covered in this series and the detailed study has checked exactly with the general picture presented in these studies published in The Oil and Gas Journal.

It is well known that certain areas of the State are geologically unfavorable. For this reason some of the magnetometer highs and lows mentioned above can be eliminated. The purpose of this paper is to point out some of the most favorable magnetometer highs in the areas that are highly favorable geologically.

Geologic Provinces

". . . . . On the whole the future prospects for Alabama are promising. There occur in certain parts of the State sediments that meet all the requirements for oil production and a variety of favorable structures occur throughout many parts of the State, which should bring about the accumulation of the oil originating in the petroliferous strata. In these series are also found formations, some of which have a high percentage of pore space and which should make good reservoir rocks. So it can be seen that it simply remains to find these localities where all conditions are favorable and there make sufficient deep tests. In the past only one or two such tests have been made, so the failures of the past should be no discouragement for the future.[2]

"Geologically Alabama is readily subdivided into three provinces; (see Plate 3) in the first of which oil accumulation in commercial quantities would be impossible; in the second such accumulation would be improbable; and in the third commercial accumulation would be possible, and in certain favorable localities even probable.

"Impossible Areas—In the following counties commercial accumulation of oil is considered impossible: Chambers, Chilton, Clay, Cleburne, Coosa, Elmore, Lee, Randolph, Tallapoosa, Talladega (in part)."

Bearing this in mind then it would seem advisable to disregard the magnetometer highs and lows that occur in this impossible area.

The lows at Anniston and Talladega and Wetumpka and the ridge from Montevallo to Ashland occur in this area.

"Improbable Area—In the following counties lying in the areas where the chance for commercial production is very improbable, it would not be wise to spend money in prospecting: Autauga, Barbour (in part), Bibb, Blount, Bullock, Calhoun, Cherokee, Dallas, DeKalb, Etowah, Greene, Hale, Jackson, Jefferson (in part), Limestone (in part), Loundes, Macon, Madison (in part), Marengo (in part), Marshall, Moutgomery, Perry, Pickens, Russell, Shelby, St. Clair, Sumpter, Talladega (in part).

"The following counties should also be classified with improbable territory, because loose gravel and other unrelated surface formations completely conceal the petroliferous strata below, making it impossible to determine the geological structure of these areas: Baldwin (in part), Lamar (in part), Mobile, Pickens, and Tuscaloosa (in part)."

The following magnetometer features occur in the area just described above as improbable territory:

Magnetometer highs at Gurley, Hartselle, Birmingham, Guntersville.

Magnetometer lows at Double Springs and Woodville.

Potential Area

"Possible Area—The counties in which the production is possible are the following: Baldwin (in part), Barbour (in part), Butler, Choctaw, Clarke, Coffee, Colbert, Conecuh, Covington, Crenshaw, Cullman, Dale, Escambia, Fayette, Franklin, Geneva, Henry, Houston, Lamar (in part), Lauderdale (in part), Lawrence, Marenga, Marion, Mobile (in part), Monroe, Morgan, Pike (in part), Tuscaloosa (in part), Wilcox (in part), Walker, Winston and Washington."

In this possible area the magnetometer indicates the following highs and lows:

Highs at Town Creek, Hamilton, Greensboro, Butler and Ozark.

Lows at Tanner, Livingston and Georgiana.

Magnetic Survey

"The subdivision of the State of Alabama into the three provinces, namely the impossible area, the probable territory, and the possible territory, The Geological Provinces of Alabama—from State Geological Bulletin No. 22 by D. R. Semmes is based upon the nature of the geological formations developed in each province. This classification can be carried a step farther and the State subdivided into eight distinct provinces in each of which the geological conditions are either slightly or entirely dissimilar, giving rise to eight territories in which the possibilities for oil and gas would vary according to the nature and structure of the rocks involved. On the accompanying outline map of the State, Figure 4, these provinces are shown. As can be readily recognized, the boundaries of the provinces usually roughly coincide with boundaries of the different geological formations. In some cases, however, the boundaries follow changes in structure rather than differences in the age of the formations. Moreover, as the subdivision of the State into these provinces is purely from the point of view of possible oil and gas production the boundary lines are indefinite and even though they generally correspond with those of the geological formations they do not necessarily do so."

"Province One — Impossible Territory. The crystalline area composed of rocks of pre-Cambrian age in most parts, which are so highly metamorphosed that neither oil nor gas accumulation is possible."

In this province the magnetometer survey shows the small ridge extending from Columbiana to Ashland. It also takes in the north and east portion of the syncline at Wetumpka.

"Province Two—The Paleozoic area of highly folded and faulted sedimentary rocks, extending as far northwest as the 65 per cent isovolve, and southwest until overlapped by the Cretaceous formations. This area represents the southern end of the folded Appalachian Mountains, and it can be considered as an extremely improbable territory for oil accumulation. The accumulation of gas, however, is possible, and the development of small gas pools can be expected throughout the more favorable portions from a structural standpoint of the entire area."

Magnetometer Features

In Province Two the map shown on Plate 2 indicates that the following magnetometer features would be included. Magnetometer highs at Gurley, Guntersville and Birmingham. Magnetic lows at Woodville, Talladega and Anniston.

"Province Three—The Plateau region and the Tennessee Valley; a province of approximately horizontal or gently warped Paleozoic sediments comprising a petroliferous series in which there are four or five potential oil and gas horizons. This area is probably the most favorable for oil and gas production that is to be found in the State. The situation of this province near the top of the Cincinnati uplift is an additional favorable feature."

Included in this favorable province, Plate 2 shows the large regional magnetometer high extending from Hamilton to Double Springs, a high at Town Creek and Courtland and another high at Hartselle; a low at Tanner.

"Province Four—That portion of the Plateau region where the petroliferous series, that is, the Paleozoic sediments, is concealed by the unconformable cover of the gravels and clays of the Cretaceous formations, so that it is impossible for the geologist to determine the structure of the formations in which the oil if present will occur. The eastern boundary of this province is indefinite, as in this area the Cretaceous sediments cover the upland areas while the Paleozoics are exposed along the streams. The possibilities for oil and gas accumulation in this province are the same as in No. 3, but owing to the additional cover, drilling will have to be continued deeper and prospecting carried on by wildcatting, strictly speaking."

Included in this province the map on Plate 2 shows the remainder of the large regional magnetic high centered around Double Springs.

"Province Five—Impossible Territory. That southernmost tip of the folded Appalachian Moutains which is covered by the overlapping Cretaceous strata. This province is considered impossible territory because the petroliferous series, the Paleozoic formations, are not only intensely folded and faulted but are wholly concealed by an unconformable cover."

Plate 2 shows that the magnetometer high at Greensboro and the magnetic low at Livingston would lie in this Province Five.

"Province Six — Impossible Territory. The metamorphic rocks of the crystalline area (Province One) which are covered by the overlapping Cretaceous formations. As the Cretaceous formations in this province do not show the characteristics of a petroliferous series where sufficiently covered to trap oil they may be eliminated as a possible oil-producing series, and beneath them in the crystalline rocks oil accumulation is likewise impossible."

Plate 2 shows that the remainder of the low at Wetumpka not already included in Province 1 will fall in Province 6.

Most Favorable Territory

"Province Seven—A region of Tertiary sediments dipping gently to the south and overlying conformably a series of Cretaceous formations, which as developed in depth in this province show many of the characteristics of petroliferous series. The Cretaceous series is of marine origin and is locally folded so that the structure favorable for the accumulation of oil and gas are developed, and these structures can be recognized as such by the geologist making an examination of the area. It is possible, however, that these sediments contain sufficient animal and plant remains to generate commercial quantities of petroleum. This province, together with Province 3, comprise the favorable oil territory of Alabama."

Plate 2 shows that the magnetometer highs at Butler and Ozark and the magnetic low at Georgiana would be included in this favorable province.

"Province Eight — A region in which the geological conditions are the same as in Province 7, except that the petroliferous series is more deeply buried (2,000 to 5,000 feet) and the surface is formed by unconsolidated material, so that the geologist is unable to locate definite structure and development must be brought about by wildcatting."

"Future Prospecting — The area considered most favorable for future testing is the northwestern portion of the State, where the Trenton limestone would be the producing horizon. Even this area is not without its disadvantages. . . . Upon the whole, however, considering the structure, the lithologic character of the section, and the evidence of the carbon ratios of the overlying Pennsylvanian coals, the area is undoubtedly worthy of further tests, provided they be located on carefully determined structure.

"In addition to the northwestern corner of the State the coal measures, where exposed in Winston, Marion and Fayette Counties should be well worth testing especially where drilling is continued to sufficient depths to test the Hartselle and Trenton horizons.

Fayette Gas Field

"Development in Fayette County has been centered around the gas field, near the station Gas Wells just southeast of Fayette, in the valley of the Lipsey River. In 1909, a diamond drill hole was put down at this point in search for coal. This hole reached a depth of 425 feet encountering two sandstones with slight shows of oil. Encouraged by these indications a company was formed and two deep tests were made adjacent to the diamond drill hole. On December 20, 1909, one of these wells reached a gas-bearing sandstone at about 1,400 feet in depth and began producing at an estimated rate of 1,600,000 feet of gas a day at a closed pressure of 630 pounds to the square inch. . . . After the discovery well several other tests were made in rapid succession. The No. 8 Providence, completed March 1, 1920, came in at an estimated rate of 4,500,000 feet of gas a day from the same sand, proving to be the best producer in the field. No. 6 came in April 15 of the same year producing from 2,000,000 to 3,000,000 feet a day."

The magnetometer study on Plate 2 would indicate that the Fayette gas field is located almost at the lowest point of the large high centered around Double Springs.

Conclusions

It should be remembered that this article and the maps submitted with it are by no means complete. The values used in contouring the magnetometer maps are based on the United States Coastal and Geodetic Survey readings taken as a rule at the county seats of the various counties.

For this reason the maps do not show detailed structure. For instance it is very possible that any one of the magnetic highs and lows on Plate 2 will have several smaller highs and lows included, and these smaller highs and lows will be developed in any detailed survey where the stations are read at intervals of from one-half to 1 mile apart.

However, the general maps shown on Plates 1 and 2 are very valuable to anyone doing or contemplating doing magnetometer work in the State. By using these maps as a guide, any small area that has been detailed can then be viewed with relation to the large general features as shown on Plate 2.

Where additional magnetometer work is contemplated these general maps will be found of great value in determining beforehand what the relief will be so that the instruments can be adjusted at the start if necessary.

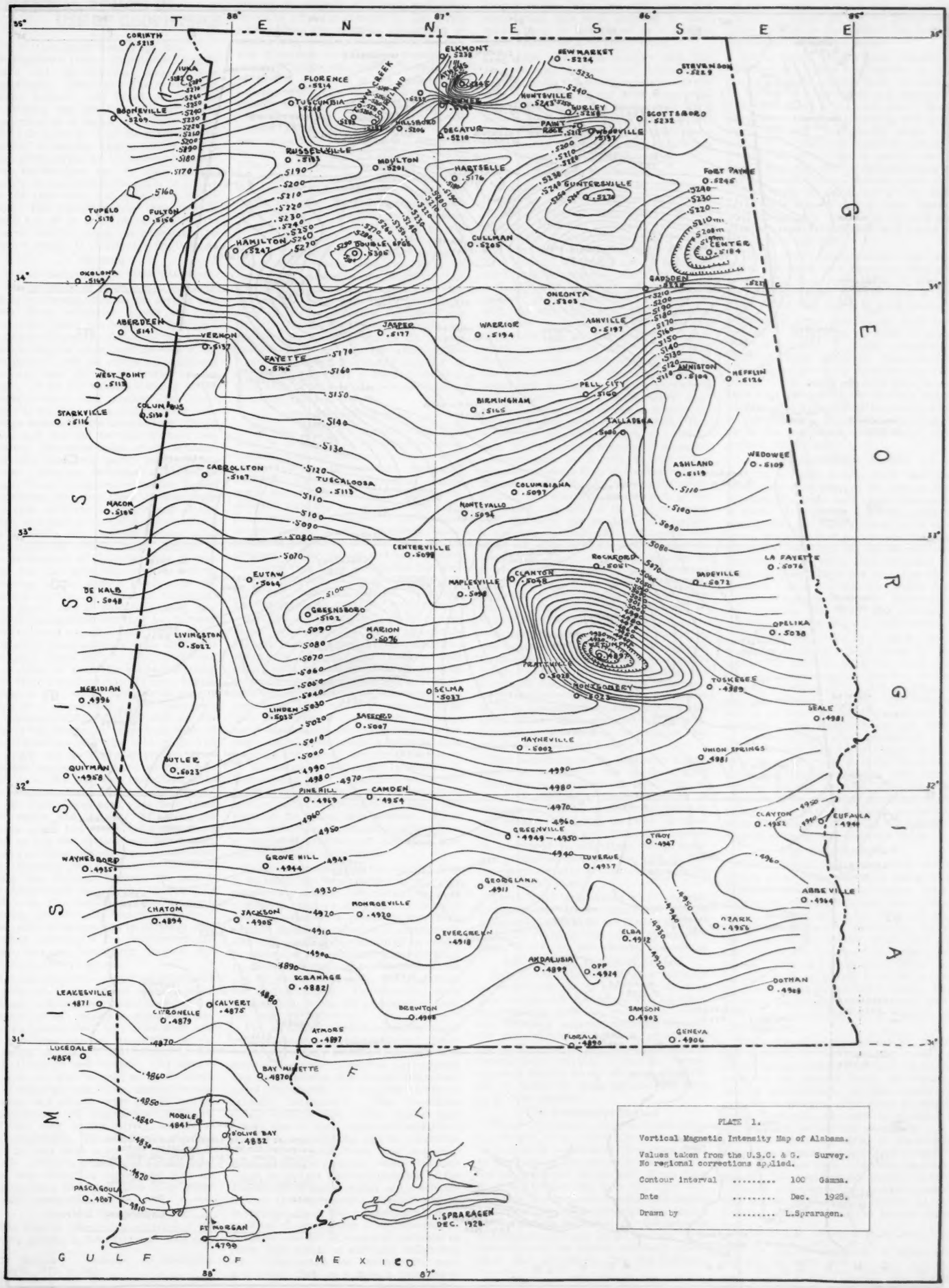
In conclusion attention is again called to those magnetometer features that occur in the areas that are favorable from the geological standpoint, for where a magnetic high occurs in a region that is favorable for oil accumulation it should prove very interesting to make a detailed study of the area with the magnetometer and use this in connection with the geological study of the area.

It was pointed out in this article that there are several of these areas where the magnetic highs and lows occur in geologically favorable territory and among these are the highs at Double Springs, Town Creek, Hamilton, Greensboro, Butler and Ozark; and the lows at Tanner, Livingston and Georgiana, with particular emphasis to be placed on the large high at Double Springs.

[2]From Bulletin No. 22 Geological Survey of Alabama by D. R. Semmes.

JUDGE R. E. BROOKS DIES

HOUSTON, Tex., Dec. 30.—Judge R. E. Brooks, 65 years old, one of four to organize the original Texas Company and who served as an officer and director of that company for years, died unexpectedly at his home here December 28. At the time of his death he was president of the Houston Realty Co. and vice president of the Southern Exploration Co. and was engaged in several private oil development propositions including the drilling of a wildcat on the new Eureka salt dome prospect just outside Houston. Mr. Brooks had been in ill health for several years. Among the notable cases in which he sat as district judge was that of the State of Texas vs. the Waters-Pierce Oil Corp.


TENNESSEE
MISSISSIPPI
GEORGIA
ALABAMA
GULF OF MEXICO
CORINTH .5215
IUKA .5180
BOONEVILLE .5209
FLORENCE .5214
TUSCUMBIA .5248
NEW CREEK
RUSSELLVILLE .5181
MOULTON .5201
TUPELO .5178
FULTON .5156
HAMILTON .5247
DOUBLE SPGS .5306
OKOLONA .5142
ABERDEEN .5141
VERNON .5137
JASPER .5117
FAYETTE .5146
WEST POINT .5113
COLUMBUS .5130
STARKVILLE .5116
CARROLLTON .5167
TUSCALOOSA .5113
MACON .5105
ELKMONT .5238
HUNTSVILLE .5243
NEW MARKET .5234
STEVENSON .5229
BURLEY .5238
SCOTTSBORO .5232
DECATUR .5210
PAINT ROCK .5211
GUNTERSVILLE .5178
HARTSELLE .5176
CULLMAN .5205
FORT PAYNE .5245
CENTER .5184
GADSDEN .5211
ONEONTA .5203
WARRIOR .5194
ASHVILLE .5197
ANNISTON .5194
HEFLIN .5126
PELL CITY .5160
BIRMINGHAM .5165
TALLADEGA .5096
ASHLAND .5119
WEDOWEE .5109
COLUMBIANA .5091
MONTEVALLO .5094
CENTERVILLE .5098
ROCKFORD .5091
CLANTON .5048
MAPLESVILLE .5098
MADEVILLE .5072
LA FAYETTE .5076
OPELIKA .5038
EUTAW .5064
GREENSBORO .5102
MARION .5076
LIVINGSTON .5022
DE KALB .5048
SELMA .5037
PRATTVILLE .5028
MONTGOMERY .5023
TUSKEGEE .4989
SEALE .4981
MAYNEVILLE .5002
UNION SPRINGS .4981
MERIDIAN .4996
LINDEN .5015
BASFORD .5007
BUTLER .5023
QUITMAN .4958
PINE HILL .4969
CAMDEN .4954
GREENVILLE .4949
TROY .4947
LUVERNE .4937
CLAYTON .4952
EUFAULA .4944
WAYNESBORO .4935
GROVE HILL .4944
GEORGIANA .4911
MONROEVILLE .4920
CHATOM .4894
JACKSON .4905
EVERGREEN .4918
ELBA .4912
OZARK .4955
ABBEVILLE .4964
ANDALUSIA .4899
OPP .4924
DOTHAN .4968
SCRANAGE .4882
LEAKESVILLE .4871
CITRONELLE .4879
CALVERT .4875
BREWTON .4908
SAMSON .4903
ATMORE .4897
FLORALA .4870
GENEVA .4906
LUCEDALE .4854
BAY MINETTE .4876
MOBILE .4841
ST OLIVE BAY .4852
PASCAGOULA .4807
FT MORGAN .4790
L. SPRARAGEN DEC. 1928.
PLATE 1.
Vertical Magnetic Intensity Map of Alabama.
Values taken from the U.S.C. & G. Survey.
No regional corrections applied.
Contour Interval ..... 10C Gamma.
Date ..... Dec. 1928.
Drawn by ..... L.Spraragen.

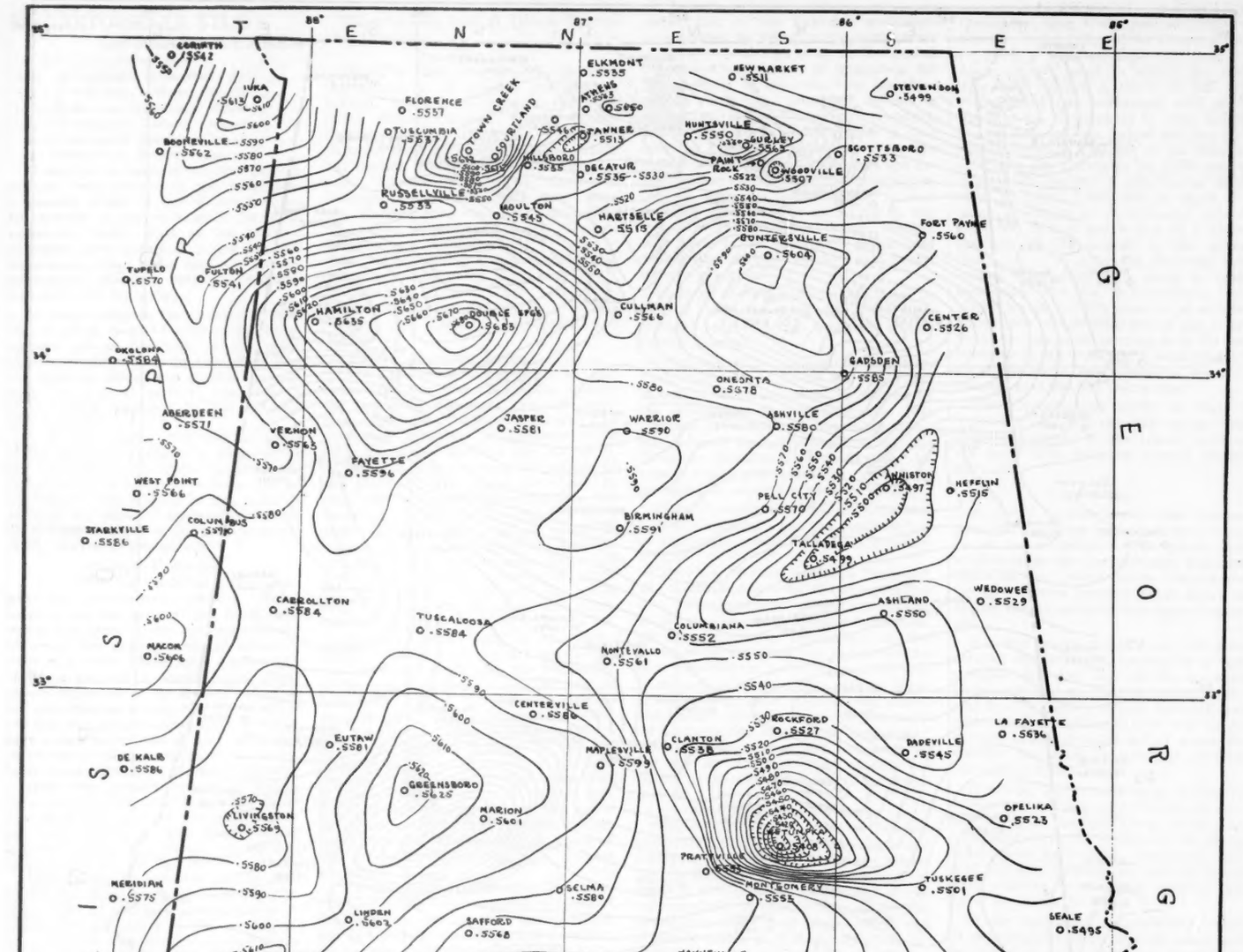


PLATE 2.

Vertical Magnetic Intensity Map of Alabama corrected for Regional Variation. To the values shown on Plate 1 there has been applied a correction for Latitude and Longitude.

Contour Interval	.....	100 Gamma.
Date	.....	Dec. 1928.
Drawn by	.....	L.Spraragen.

ESSENTIAL POINTS IN USE OF GEOPHYSICS

(Continued from Page 34)

To eliminate these, computations can be made and the influence arising from topography deducted. These computations, however, are based on two assumptions, the one that the surface irregularity is of simple geometric form—which it never is—and the other that its density is exactly known, which also is only partly true. To make somewhat correct assumptions and by this approximately correct deduction again is a matter of experience and geological knowledge. The possible error then will be small and of no large importance for the general results unless the subsurface influence sought is of minor magnitude.

"Isostasy"

But another, and now often vital factor is the influence of large blocks of earth, whole continents, etc., on the torsion balance. Such influences mostly are comprehended under the name of "isostasy." Continental isostatic influence can be expected even far away from the edge of the continental shelf on which the continent plunges into the great depths of the ocean. With increasing distance it becomes weaker and weaker. Its exact value is difficult to obtain for even pendulum measurements include local attractions and can not be used without correction. The exact value of the isostatic influence, therefore, partly has to be assumed. Isostatic influence will also be found close to mountain ranges, buried mountains, etc., and there its magnitude can only be guessed. The result of isostatic influence is that of a one-sided pull which shifts the findings to one side, sometimes for several miles. Errors in the assumption of the magnitude of isostatic pull therefore may result in serious mistakes in the proper location of the geologic occurrence detected. Geologists have found that in numerous cases, geological occurrences detected by the torsion balance actually were found to be located at some distance from the point indicated. Such shift or other shifts can also occur in case the various reacting beds are not conformable. In case, for example, a deep seated anticline or granite ridge or a general dip of the elder beds is present (Mid-Continent) and on the side of the structure, then such shift of the indications will also take place and to apply the necessary correction more geologic assumptions have to be made. Folding of the beds and irregularities of the deeper underground are also present in the Gulf Coast area,[2] but here these occurrences and isostatic influences are rather small and could be neglected as long as only the shallow salt domes with their overriding influence were prospected for. Recently the situation in the Gulf Coast has changed through the search for deeper salt domes, the influence of which on the torsion balance is much smaller, and now also here the amount of such other influence has to be taken into account. Otherwise the deep-seated salt dome may be improperly located and valueless acreage leased.

In case, however, proper consideration is given to these various possible interferences and in areas where they are not present or of negligible magnitude the torsion balance does very good work and its enormous success, especially in the detection of shallow salt domes in the Gulf Coast, is well known.[3] The torsion balance can also be used to detail structures and especially to determine the outline of salt domes even though actual determination of depths are extremely difficult, only partly correct, and often even impossible. This is due to the fact that in very rare cases the total gravimetric influence actually will arise from only one disturbing mass, and that all computations for depth have to be based on such assumption.

Practical Sensitivity

The general practical sensitivity of the torsion balance is $2\text{-}3\times10^{-9}$ cgs. This sensitivity is entirely sufficient and there would be no use to increase it. The errors arising from the mistakes necessarily included in the various assumptions for density of surface irregularities, possible isostatic influence, etc., usually already will be greater than one to two such torsion balance units even though they can be greatly reduced by experience and knowledge. Due to the high sensitivity of the torsion balance instrument any difference in surface topography will show up in the readings. Rough country, rolling hills and especially mountains will be traced at many miles. It is clear that the rougher the topography is and the larger its effect on the instrument, the more serious the mistakes in the corrections will be, and finally some stage will be reached where this error becomes of such a magnitude that no more interpretation of the results is possible. In rough topography measurements with the torsion balance, therefore, are justified only in case the subsurface occurrences have such overriding influence that they can be detected clearly in the readings, and are at least twice as big as the largest possible total error in the assumptions. Again geological knowledge can be of great help and there is little doubt that pure lack of this in many cases has resulted in failures.

The Magnetic Method

The total force of the earth's magnetic field is measured in laboratories, total intensities of the magnetic vectors, such as declination, vertical and horizontal intensity, are made by special instruments and expeditions. Both require considerable time and are of no greater value for commercial purposes than relative measurements. Relative magnetic measurements are much simpler and the instruments much lighter and handier and, therefore, they alone are applied for commercial purposes. Then mostly only vertical and maybe horizontal intensities are measured, i.e., one or two vectors.

Unlike the gravimetric field of the earth, its magnetic field constantly changes. Aside from secular variations which are of theoretical interest only there are daily variations and occasionally magnetic storms. The latter will interfere with all magnetic measurements, and operations have to be interrupted until they have passed. As long as the magnetic disturbance due to geologic occurrences is of considerable magnitude (250 gammas and more) the daily variations of the magnetic force can be neglected. But as soon as it is smaller, which will be the case in most of the structural studies with magnetometers, they will have to be taken into account. These daily variations are obtained either from a nearby observatory or through a special stationary instrument.

For quick reconnaissance surveys over large areas the measurement of only one component, usually the vertical, will be sufficient. But as soon as any detailed work is required, a second vector (horizontal) should be added and occasionally also the declination measured in order to determine the complete magnetic field. In doing so, certain depth determinations can be made which often are important for interpretation. Furthermore, some information on the dip of magnetic beds, etc., may be obtained.

For structural studies magnetic measurements seem to be adaptable and of economic value only in case beds with well defined magnetic properties are present. For sedimentaries this means throughout equal distribution of magnetic material (chiefly magnetite). This condition rarely will be met. Also shallow salt domes, due to their extreme diamagnetic character, occasionally can be magnetically located. Aside from such sedimentaries, especially igneous rocks, volcanic plugs, intrusives, the configuration of the underlying massive rocks, etc., will influence the instrument. It must also be recognized that the mineralogical composition of such rocks is of importance. A larger amount of magnetic material in them will create a stronger indication, etc. This means, for example for massive rocks, that, as a rule, a more basic rock will have greater influence on the magnetometer than an acid one. Not considering this such increase in magnetism may be interpreted as a geologic uplift where no such uplift exists.

In case now such massive rock formations are uniform and conformably uplifted with the overlying sedimentaries then their detection will be of commercial value. But this rarely is the case. It is known from the Texas Panhandle and some few other districts. In most cases, however, the existence of such parallelism must be extremely doubted.

Magnetic Measurements

Magnetic measurements on structures, therefore, should be applied only after especially careful examination of the problem. It should constantly be kept in mind what information can be obtained, and what the readings may mean to practical geology. It should not be forgotten what a basic intrusion may show up as a "high" where no uplift exists, that an uplift of the base rock might not conform with the structure, etc. Unfortunately, just here many mistakes are made and magnetometers are run over wide areas where in advance it could be said that there is no chance for success. This is due to the fact that magnetic measurements are speedy, and the instruments rather cheap. It is furthermore commonly believed that to run a magnetometer is as easy as to run a transit. This is not the case and, besides, it must be said that the interpretation of magnetic measurements as a rule is still more complicated than that of torsion balance measurements. Besides, just as the gravimetric, the magnetic instrument is influenced by the total of the various forces, and, therefore, the readings may include a summary of magnetic influences, instead of only the one which may be useful. In many cases it is possible to determine the position of such influence by measuring several components of the magnetic force, but nevertheless very often the meaning of the results will be extremely doubtful.

Attempt has been made[4] to decide on the commercial applicability of magnetic measurements for the detection of structures on large areas by relating the known oil fields to the results of government magnetic stations. The usefulness of such investigations for this purpose must be extremely doubted. They will, however, give valuable information for questions of regional geology.

The sensitivity of the magnetic instruments at present in use in the United States is rather low. A sensitivity of about 15 gammas for the vertical and 10 gammas for the horizontal instrument is not enough. It should be twice or three times as high to give real good results on structural investigations. More sensitive magnetometers now are built in Europe and are said to have overcome the experimental stage.

There is no interference with magnetic measurements from topography unless topographic elevations are formed by magnetically reacting rock such as basaltic plugs, lava flows, greenstones, and others.

Self-Potential Electrical Method

Only for completeness this method may be mentioned. It is based on the fact that certain ore bodies as well as other occurrences, such as anthracite coals, etc., create a natural electrical current, the distribution of which is studied on the surface by means of simple instruments. Such creators of natural electric currents usually do not occur in oil fields and it therefore seems unnecessary here to go into details.

The Radioactive Method

Water circulating on open faults often is charged with radioactive emanation. In case such occurrences then come close to the surface the emanation is given to the air contained in the soil. From here it slowly evaporates into the open air. By using this fact occasionally such faults and fractures can be detected and traced on the surface by measuring the amount of emanation present in the soil air. This naturally will be higher vertically above them than elsewhere. But the radiance of this method is small and in case the faults are sealed on top, or do not come close enough to the surface, no increase in emanation will be found.

Oil is known to be a great absorber of radioactivity. This fact cannot be used in locating oil deposits from the surface by radioactive measurements, because of the rapid decay of the emanation. But if samples or cores of a drilling well systematically and immediately after they came out of the hole would be tested as to radioactivity, then in many cases it would be found that in samples taken directly above the oil deposit there is a sudden drop of radioactivity.[5] By doing so it could also be said at what depth a well had closely missed an oil pool and maybe lateral drilling then still would hit it and save the well.

Radioactive measurements are very cheap and quick and, therefore, very economic. But their applicability is very restricted and there will be only a few cases where they will give good results.

Recently some experiments have been carried on in Russian oil fields, to measure the amount of highly penetrating radiation from the earth, which is said to be higher above oil deposits than elsewhere.[6] The origin of such rays is not known as yet and to the writer's knowledge no such experiments have been made in this country. Therefore, no statements as to the usefulness and value of such method can be made.

The Geothermic Method

It is a well known fact that the geothermic gradient, i.e., the rise in temperature per depth unit varies from place to place. It seems as if certain minerals absorb heat and others create it, in most cases probably due to interior chemical changes. Depending on the thermal conductivity of the rocks such abnormal increase in temperature can be felt at short distance. Also certain oils create heat but others apparently do not. Where such heat creating oils exist the geothermic gradient is smaller than in other areas.[7]

In fields where the oil is known to be a creator of heat measurements of the geothermic gradient in a well may give some information as to whether or not it is approaching oil. But the method is not very reliable, has many interferences, and in no case can definitely answer the question. The measurements are made by means of special thermometers. To do so the well has to be stopped for at least 24 or 48 hours, to lower the instruments and take the readings. This means expense without progress. Besides, the radiance of the method is small and therefore only in very few cases geothermic measurements will meet the fundamental request to be of real economic value.

The Seismic Method

Elastic waves originating from earthquakes or artificially created travel with different speeds in beds which petrographically differ from each other. Generally speaking, the harder the beds are, and the more lime they contain, the higher the speed of the elastic waves will be. The speeds are measured in meters per second. They vary from about 600 m/sec. for dry sand or gravel to 6,200 m/sec. for igneous and metamorphic rocks. For practical purposes the elastic waves nearly always are created by the blasting of explosives.

There are three fundamentally different methods to measure the speed of elastic waves; measurements of the movement of the ground itself, of velocity, and of acceleration. It also would be possible to measure other items as amplitudes, force, etc., but such measurements do not seem to be very promising.

By measuring the speed of the elastic waves one or more seismically distinguishable beds below each other can be determined. The requirement herefor, is that the lower bed always has the higher speed. The actual depth below surface of the bedding plane between the bed of lower

[2] J. Sohander: Zeitschr. f. praktische Geologie, 1927, p. 152.
[3] J. Logan: Oil Weekly, Aug. 26, 1929, p. 80.
[4] L. Spraragen: The Oil and Gas Journal, Sept. 27, 1928, to April 4, 1929.
[5] R. Ambronn: Jahrb. d. Halle'schen Verbandes, Vol. 3, 1921, p. 27-46.
[6] F. W. Lee, U. S. Bureau of Mines Inf. Circular No. 6,072, 1928.
[7] E. De Golyer; Econ. Geology, Vol 13, 1928, p. 275; J. Koenigsberger; ibid. Vol. 7, 1912, p. 676.

speed above and that of higher speed below is determined.

The first seismic instrument for geophysical investigations measured the ground movement itself by optically recording the movement of a pendulum on a photographic film. This required that the recording take place at the station where the receiver was set up. Such instruments still are in operation and they have had tremendous success in the Gulf Coast area, in the detection of shallow salt domes, which is about the easiest problem for seismic as well as torsion balance investigations. Formerly seismic receivers were set up in lines, and profiles shot. The necessity of covering and reaching a decision on large areas within short time has partly resulted in abandoning this profile method, and developed the so-called fan shooting method. Here the receivers are set up more or less in a circular arrangement around the shot and by this system more acreage can be covered with one shot in less time. By this arrangement, however, only accidentally salt domes are detected, for unless shot and receiver are placed at a favorable distance from the salt dome, the salt will not show up in the seismic record. Because of this this type of seismograph is known to occasionally have missed salt domes.[8] Fan shooting, therefore, should be avoided or only taken for rough preliminary investigation and no area be declared barren when only fan shooting has been applied.

Detection of Faults

For structural studies, the detection of faults, etc., measurements of the ground movement do not seem to be well adaptable, or, at least, only under certain conditions. Very often the dip of the beds is very small and the accuracy of the method does not seem great enough to really determine it. Besides, in most cases, only one of the fastest elastic waves arriving at the receiver can be clearly detected in the record and it is doubtful whether or not this wave always is the same. Very little has become known of success of ground movement measurements on structures. Success on the Balcones Fault has been claimed and a few others.

Measurements of the velocity of the ground particles are made by transferring into electrical currents, the movement of a coil against a magnet, and then recording the electrical currents created. This would allow the impulses to be transmitted at will from the receiver to any other place and the records of several receivers to be joined on one film. The recording device then could be separated from the receiver and set up at an entirely different place, when its movement will no more disturb the receiver. In this group belong several devices including the geophone, which has had considerable success in locating Gulf Coast salt domes.

Natural ground unrest seriously interferes with both methods. It is created by various factors, such as friction of the wind on the ground, movement of animals, traffic, industry, etc. Even though the periods of the waves created by the natural ground unrest generally are considerably greater than those created by an explosion, the elimination of their interference in movement and velocity meters fundamentally is impossible. It is therefore necessary that for these the charge of the shot be so high that the waves created by it become of a greater amplitude than those originating from the natural ground unrest. To increase the sensitivity is of no practical value for the natural ground unrest would be increased in the same proportion. The limit of amplification for these devices, therefore, is about 20,000 times and here already the natural ground unrest clearly appears in the records. A further increase is useless. This means that the charge for the shot has to be enormous as soon as greater depths shall be reached and the distance from shot to receiver has to be increased, or if heavy storms or traffic increase the amount of the interfering natural ground unrest.

[8]M. Hannemann: Zeitschr. f. prakt. Geologie, Vol. 35, 1927, p. 168.

Besides, R. Ambronn[9] has shown that the very first waves arriving at the receiver are of rather small amplitude. Only later waves of greater amplitude appear and also apparently not always at proportionally the same time interval. These waves with greater amplitude now are those which the instruments, measuring the ground movement or the velocity, record and as they do not always appear in the records at the same time the exactness of the readings and, therefore, of depth determinations is still lessened. The very first arriving elastic waves of small amplitude can be detected only with extreme amplification and under suppression of the natural ground unrest.

Therefore it is necessary to suppress the natural ground unrest in the records, which is done by measuring the acceleration of the ground particles. Whereas the period of the natural ground unrest is rather large and that of the waves created by an explosion very short, the acceleration of the former is small in comparison to that of the latter. The registration of the curve of acceleration, therefore, seems to be especially fit to suppress the interfering natural ground unrest. In doing so the amplification of the records can be and already has been increased up to 40,000,000 times. The larger amplification vice versa allows to greatly reduce the charge for the shot and practical tests have shown that such reduction at present is about one hundredth of the charges needed before. This means great saving in costs of explosives, transportation, damages, laborers, and danger.

Acceleration Meters

Acceleration meters, now in actual operation, change the pressure waves arriving at the receiver into electrical currents. In this respect they therefore have the same advantages as the velocity meters in allowing this transmission at will, from place to place and taking of the records at a place far away from the sensitive receiver. The suppression of the natural ground unrest furthermore makes it possible to distinguish the very first waves of small amplitude, arriving at the receiver, which as outlined above, are of fundamental importance for accurate work. Besides, now not only the first wave arriving at the receiver can be found in the record but each type of elastic waves can be distinguished, because of the suppression of the natural ground unrest. This in turn allows much more complete interpretation and determination of all the bedding planes which seismically are distinguishable. It can be said that with acceleration meters now in existence differences in velocity down to about 200 m/sec. can be distinguished.

Another important factor which was formerly overlooked, must also be mentioned, i.e., that no depth determination can possibly be accurate unless also the thickness of the upperlying beds and, therefore the time which the elastic waves need to penetrate them is accurately known. Whereas seismic investigations, like every geophysical method, in most cases will be made over undrilled areas, or over areas with only a few widely spaced wells, the seismograph itself will have to determine the thickness of the upperlying beds and can easily do so by profile shooting at short distances. If correctly applied and intelligently used, acceleration meters can make depth determinations with an accuracy of about 1 per cent and occasionally even less. This also makes acceleration meters especially adaptable to structural studies and with their aid seismic key beds can be mapped to their lateral extension and subsurface structure maps made.

The acceleration meter can also map faults and especially outline and detail the form of salt domes and their surrounding beds. The latter until now was entirely impossible with any geophysical method.

Aside from recording refracted elastic waves occasionally also the reflection of such waves is measured. This is done by setting up the receiver close to the shot. As a rule reflection will take place only in case there is a great difference between the speeds of such waves in the different layers and a very sudden change in speed, as for example from salt domes imbedded in soft beds. In many cases the value of such measurements must be doubted for depth determinations would be possible only in case the thickness of the various beds and the speed of the elastic waves in them is exactly known and uniform. Otherwise grave errors may occur.

[9]Eng. & Mining Journal, July 20, 1929.

No topographic occurrence will interfere with seismic measurements but it must be understood that every geophysical reaction is three dimensional and that for example capping of mountains by limestones, etc., will react on the speed of seismic waves in the same way as if such limestone would be below the surface.

The Electrical Methods

The self-potential method using natural earth currents has already been briefly mentioned above. The methods using artificial electric current are very numerous but can be dealt into two large groups, those using direct currents and those applying alternating current.

With such measurements differences in electric conductivity can be detected. In the laboratorium the electric resistance usually is measured in Ohms per centimer cube. It is estimated that for practical purposes in the field the difference in conductivity has to be at least $1{,}000\omega$/c.c.m. to allow electrical differentiation. If the resistivities are higher than $4\times10^6\omega$/c.c.m. the materials can no more be electrically distinguished from the theoretical standpoint[10].

The only conductor known in oil fields is the salt water. Its restivity depends upon its salt content. The only conducting horizon therefore on which electrical methods can work in oil fields are salt water horizons. Direct electrical detection of high resistive minerals, as for example oil, theoretically is impossible because their resistivity is higher than $4\times10^8\omega$/c.c.m. and is not sufficiently distinguished from their also low conducting surroundings. Several claims have been made by companies and individuals that they could locate oil directly by their electrical method[11]. The results published do not look very convincing and the actual successes claimed have been strictly refused by others[12].

As long as no other interference exists and the salt water is restricted to a definite horizon, electrical measurements in oil fields may be quite valuable. But it must be doubted if in oil fields the salt water always occurs in a distinct horizon. It must be kept in mind that salt water like oil, is a liquid and is of especially low viscosity. Therefore it always will try to also penetrate other beds and rarely the salt water horizon will quite conform with the structure. Also faults and fractures may bring it into other horizons, may suddenly cut it off, etc., so that it is doubtful if salt water horizons or, to be more exact, the salt water itself will be a real reliable key bed for structural studies, in all cases.

For the radiance of electrical methods in most cases not only the amount of conducting material present, but also the amount of its surface is important. This is the reason why even electrical methods which cannot detect ore bodies deeper than a few hundred feet below surface can reach much greater depths in the study of salt water horizons. But very little has become known of results in this line. The finding of a new salt dome in Alsace is claimed[13] and some studies on oil fields near Vienna, Austria[14], have been published.

Another method is the measurement of resistivities of large blocks of earth. The various rocks and beds and changes in their moisture content in certain cases have sufficient difference in electrical conductivity to allow electrical differentiation. By this also structural studies can be made and are said to have been quite successful and rather accurate. But there is no publication as yet on such structural studies in oil fields[15].

Electrical methods are rather slow, and as long as they can only follow up the structurally often uncertain salt water horizons they seem to be less efficient and economic than for example the seismic method. Depth determinations can be made, but their accuracy is not known. There is, however, hardly any geophysical method which recently has shown as much progress as the electrical and its final possibilities cannot be foreseen. For structural studies they still seem to be in an experimental stage.

[10]R. Ambronn: Petroleum, Vol. XXIII, 1927, p. 289.

[11]N. Gella: ibid.

[12]D. C. Barton: Bull. Amer. Assn. Pet. Geol., Vol. XI (Oct.) 1927, p. 1,125.

[13]S. F. Kelly: Mining & Metallurgy, Sept., 1928, p. 398.

[14]K. Sundberg: Inst. Mining & Metallurgy, London, April, 1929, No. 295.

Conclusions

The foregoing investigations reveal the fact that for structural studies and studies of the exact shape and position of salt domes, etc., the seismic method of measuring the acceleration of the ground particles is the most reliable and speediest and, therefore, most economic of today. The accuracy of depth determinations is an important factor not only for the structural study itself but also for the outlay of wells, etc. There is no geophysical method known today which in any way herein can compete with the seismic method. Naturally its application is limited, limited to the presence of seismic key beds. In case beds with high velocity are unconformably overlying the pay horizon it might not be applicable at all. In such cases some of the other methods may be useful. Aside from the still unknown possibilities of the electrical methods the torsion balance then seems to be next, whereas the magnetometer for structural work should be very carefully applied and as a rule only taken to check another method.

I believe that also our commercial valuation of geophysical methods should be fundamentally changed. Until now their economy was more or less calculated from the amount of acreage covered in a definite period of time and based on the costs per acre surveyed. We should lay more stress also on the results obtained. If a method predicts a salt dome or structure and such finding is drilled and missed by the well, then such failure should be fully charged to the method. On the other hand it should get full credit for every success. A "success" in this connection of course does not mean oil—for as yet none of the instruments can detect oil or is claimed to be able to—but structures or salt domes favorable for the accumulation of oil. If we took this measure we would probably find that the magnetic method, so much favored in this country, is the most expensive of all for it so seems as if more failures have been drilled on "magnetic highs" or other magnetic information than on indications of any other method.

The measure of economy should not be acreage covered but success. The total costs of operations including the drilling of geophysically located wells should be taken. Credit to the geophysical method then for correctness of the indication and discredit for incorrectness, in case this really is due to the methods and not to lack of experience in interpretation.

Large sums today are spent for geophysical investigations, often without that it is understood that every dollar spent in the application of the incorrect method is nothing but a waste in money. Every failure threatens the confidence in these scientifically really excellent methods. Economy is needed here as well as elsewhere and no geophysical investigation should be started without first ascertaining—as far as this can be done in advance—that the method under consideration really can give good results and that its indications will be of real economic value to the undertaker. Today hardly any well is drilled without the advice and supervision of a geologist. The same must be required for geophysics relating to the geophysicist. This gives the latter a great responsibility and whereas he mostly will also have to make the

(Continued on Page 104)

[15]Compare I. B. Crosby and S. F. Kelly: Eng. News Record, Feb. 14, 1929.

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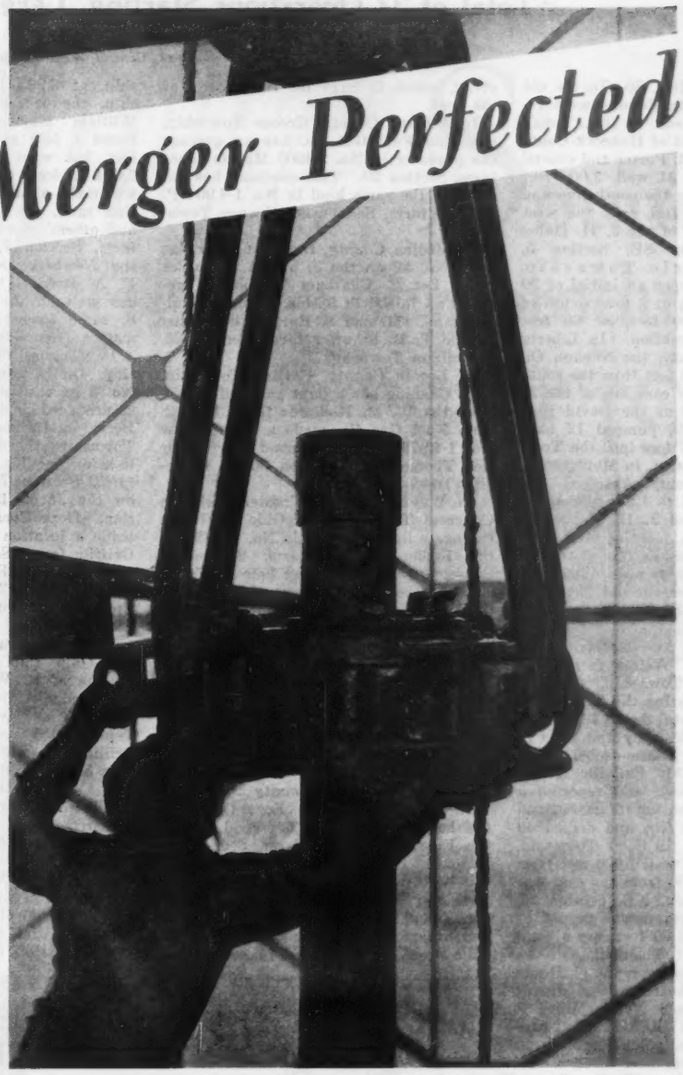

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Few Completions in the Old Lima Field

Nine Producers Out of 30 Completions in Central Ohio. Total of 32 Operations Starting, Large for the Season

By Whit

Staff Correspondent, Central West Fields

FINDLAY, Ohio, Dec. 30—In the old Lima Field a few completions were reported. In the Findlay Field of Hancock County B. Porter and others' No. 31 well, 1,000 feet from the south line and 200 feet from the west line of the J. H. Haley farm, SE, Section 5, Eagle Township, pumped an initial of 20 bbls. at a total depth of 1,380 feet, or 60 feet into the Trenton formation. In Liberty Township, same county, the Newton Oil Co.'s No. 16 well, 600 feet from the south line and 450 from the east line of the A. Montgomery, mapped as the David Bish farm, SE, Section 29, pumped 12 bbls. from 1,350 feet or 97 feet into the Trenton. Near Prairie Depot, in Montgomery Township, Wood County, Anson G. Argue abandoned Nos. 1 to 12 on the Argue farm, Section 19, and J. H. Henderson did the same with No. 1 Brant farm, Section 15, same township. In Freedom Township, same county, near Woodside, Fred M. Smith pulled out old No. 1 on the Fred Restmeyer, Section 24.

A. J. Schulte drilled a test 600 feet from the north line and 300 from the east line of the M. Weiter farm, NE, Section 31, Noble Township, Auglaize County, after penetrating the Trenton to a depth of 53 feet; total depth, 1,203 feet.

The test of J. H. Murphy and Sons in the southeast corner of the Isobel Sibrel farm, SE, Section 31, Ballville Township, Sandusky County, and reported a dry hole, is being used for its gas. Sand was topped at 1,386 feet and drilled 49 feet in the Trenton. In Scott Township, S. Feasel and others' test, 1,600 feet from the north line and 200 from the east line of the Henry Lehman, NE, Section 26, came in a duster. Sand was tapped at 1,237 feet and drilled 50 feet into a total depth of 1,287 feet. The Ohio Oil Co. abandoned the old No. 4 on the C. Houtz farm, Section 4, same township. Hurry Up Oil Co. abandoned No. 3 Miller & Miller farm, Section 19, Jackson Township. Lindy Oil Co. is drilling No. 10 on the A. E. Waggoner, Section 11, Washington Township, and the Gibsonburg Oil Co. is drilling No. 1 M. Hetrick farm, Section 2, same township.

In Seneca County, H. Coyle's second test, 800 feet from the south line and 600 from the east line of the Frank Beck farm, on the oil map as the P. Burrier farm, NW, Section 24, Liberty Township, Seneca County, in the Tiffin Field, is a light gas well at a shallow depth of 562 feet. C. L. Messer and others are drilling on the Ida M. Rosenberger, Section 36, same township. In Pleasants Township, same county, George Huffman drilled a dry hole on the Retta Noble, Section 18. Hulse and others drilling No. 2 Harry Beck, Section 30, and J. H. Murphy and Sons are drilling No. 1 C. J. Fry, Section 6, same township. In Hopewell Township, same county, J. H. Murphy & Sons are drilling on the S. Wolfe farm, Section 1, and R. C. Jones is drilling No. 1 Rachael Snyder, Section 26, Hopewell Township. In Bloom Township, in the extreme southeastern part of the county, C. L. Williams is drillling a wildcat on the P. Stucky, Section 32, Bloom Township, Seneca County.

CENTRAL OHIO

Thirty completions were reported from the Central Ohio Field of which 19 were producers with an initial production of 322 bbls., five dry holes and six gas wells. In new work starting for the same period, there were 12 new locations made and 20 wells started drilling, a total of 32, which is large for this season of the year.

In Ashland County, Greene Township, the Ohio Fuel Gas Co. has an average gas producer in No. 2-4905 Marvis Jones farm, Section 20. This company has another of the same kind in No. 1-4,904 P. J. Hess farm, Section 28, Orange Township.

In Medina County, the East Ohio Gas Co.'s No. 12 on the J. and A. Jalensics farm, Lot 2, Chatham Township, produced an initial of 5 bbls. from the shallow sand. M. and S. Burtner is drilling on the T. B. Stauffer farm, Section 36, Vermillion Township.

In Lorain County, Carlisle Township, J. S. Cushing has a light gas well in No. 1 on the W. M. Richards farm, Lot 12. Ohio Fuel Gas Co. made a location for No. 1-4,979 on the Edmond Darrow or Leo Thome farm, Section 30-31, Ridgeville Township.

In Wayne County, Wooster Field, in Congress Township, the Ohio Fuel Gas Co. has a light gas well in No. 1-4,888 on the Keeler-Andreson farm, Section 1. Same company has a dry hole in No. 1-1,370 on the A. M. Boreman farm, Section 6, Wayne Township. Same company made a location on the C. E. Wearley farm, Section 23, Chester Township, and Faulkner and others have a fair gas in a second test on the Riley Howey farm, same section.

In Holmes County, the Arkansas Natural Gas Co. made a location for No. 7 William Miller farm, Lot 11, Monroe Township.

Summitt County

In Summitt County, East Ohio Gas Co. has a dry hole in a second test on the Frank H. Mason farm, Section 13, Franklin Township. The Stray sand in this well was found dry at 3,846-3,972 feet, and only a slight showing of gas was found from 3,977-4,021 feet. Pille and others have a fair gas well on the Pille-Myers farm, Section 13, same township, at 3,985 feet. In Copley Township, the Wiser Oil Co.'s test on the William Martenas farm, Section 19, found a fair gas volume from 3,606-34 feet, but went into another sand from 3,664-72 feet, the latter being dry, but will make a small gas producer from the first sand. In Greene Township, Eagon and others' test on the Katherine Selzer farm, Section 7, is a fair gas well in the Newberg sand from 3,506-17 feet. F. A. Brendall and others have a fair gas well on the C. Kerr farm, Section 8, same township, in the Clinton formation from 4,008-22 feet.

In Licking County, Fallsburg Township, the Arkansas Natural Gas Co.'s No. 5 on the Lecta Mizer farm, Section 2, produced an initial of 20 bbls. in the Berea sand from 826-37 feet. In Perry Township, the Settles Oil Co. made a location for No. 5 on the Nellie Smith farm, Section 7, and is drilling No. 7 on the Jacob Lothers farm, same section. Hope Construction & Refining Co. made a location for No. 3 on the L. C. Griffin farm, Section 24. In Hanover Township, the Everette Gas Co.'s No. 3 on the Felix Claypool farm, Section 7, produced an initial of 70 bbls. from 2,862-92 feet.

In Muskingum County, Clay Township, the Ohio Fuel Gas Co.'s No. 1-4,889 on the S. R. Wigton farm, Section 10, produced an initial of 23 bbls. from the Clinton lime pay from 3,605-50 feet, total depth 3,655 feet. Heisey Gas Co. is drilling No. 2 James McSidle farm, Section 5, Hopewell Township. Athey Drilling Co. is drilling No. 3 Edward D. Walker farm, in Falls Township. Hope Construction & Refining Co. made a location on the B. O. Horton farm, Section 6, Jackson Township. In Perry Township, the Wittmer Properties, trustee, drilled in a test on the Sarah Romine farm, in the third quarter, getting a 39-bbl. initial producer from the Clinton formation from 4,038-83 feet. The Atha Co. is drilling No. 2 Maud Shepherd and others farm, Section 23, Union Township, and also drilling No. 1 on the Thomas Mintier farm, Lot 24, same township.

Cuyahoga County

In Cuyahoga County, Breck Township, Hulse & Kundtz' test on the Theodore Kundtz farm, Lot 63, came in a dry hole.

In Ashtabula County, it looks as though some extensive development would be done in the immediate future. In Colebrook Township, F. A. Brendall and others are drilling on the S. and M. Kozman farm, Lot 41. The Ohio Fuel Gas Co. made a location for No. 1-4,977 on the George W. Kelsey farm, Lot 19, Sheffield Township, also a location for No. 1-4,978 on the C. E. Chester farm, Lot 34, Rome Township.

In Richland County, Worthington Township, the Ohio Fuel Gas Co. has a nice gas well in No. 1-4,894 on the Alex Innes farm, Sections 24 and 25, and made a location on the John M. Hay farm, Section 24. The Kemrow Co. made a location on the Clara Weidler farm, Section 29, Butler Township. In this same township, quite a number of years ago, there was a rush for leases due to the bringing in of a well over a mile south of the town of Butler, which was a large producer of a very high gravity oil, but it was a freak, as numerous wells were drilled in the vicinity without a showing of oil worth while.

In Knox County, Brown Township, the Ohio Fuel Gas Co. is drilling No. 2-4,934 Herbert Frank farm, Sections 5 and 12, and the Pure Oil Co. is drilling a second test on the Parker Mavis farm, Section 1, Jackson Township, same county, also No. 1 on the Joseph Crider farm, Section 9, same township.

In Coshocton County, Franklin Township, the Ohio Fuel Gas Co. has a fair gas well in No. 1-4,902 on the Barnes Coal & Mining Co.'s property, in the third quarter. In this well the top of the Niagara was found at 2,466 feet; lime sand from 2,583-99 feet; total depth 2,603 feet. Spindler and others' No. 5 J. Wolford farm, Section 24, Pike Township, was reported good for 70 bbls. initial.

Athens County

In Athens County, Rome Township, the Coleville Oil & Gas Co. got a light gas well on the L. B. Burrows farm, Section 31, from the Maxon sand from 987-1,027 feet. Fairfield Oil & Gas Co. got an average gas well in a second test on the R. E. Wilson farm, Section 34, Lodi Township, in the upper Berea sand from 1,480-83 feet. State Oil & Gas Co. is drilling No. 10 on the State Hospital property, Section 15, Athens Township. Kachelmacher estate is drilling a wildcat on the Millfield Coal & Mining Co.'s property, Section 5, Dover Township. Ohio Fuel Gas Co. has an average gas producer in No. 1-4,913 on the L. D. Posted farm, Sections 1 and 7, Cannon Township, in the lower Berea sand from 1,677-90 feet, total depth 1,696 feet, and a dry hole in Lee Township, in No. 1-4,924 on the Elmer M. Enlow farm, at a total depth of 1,278 feet. Top of the sand was found at 1,270 feet and a heavy dose of water at 1,275 feet.

In Meigs County, Tyree and others' No. 14 on the William Carnahan farm, Section 11, Sutton Township, is reported good for 10 bbls. initial from the upper Cow Run sand from 620-40 feet. Root & Palmer got a dry hole on the C. C. Hill farm, Section 12, at from 1,980-97 feet. No showing was found in the Cow Run sand in this well from 650-

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IMPORTANT SHOWING IN KENTUCKY SOUTH OF THE ROUGH RIVER FAULT

By Whit

OWENSBORO, Ky., Dec. 30.—During the part shutdown of development work in Daviess, Ohio and adjoining counties, western Kentucky, the operators and lease men are having a busy time taking leases to the south of the Rough River fault, where oil has been found. This territory had been overlooked until Sargent, Johnson and Jenkins, under the name of G. H. Rice, as trustee, brought in their Barlow sand well on the National Brothers farm on the western edge of Ohio County, instead of Daviess County as reported, at a depth of 1,569 feet, about 5 miles from any known production and about 4 miles east and a little north of Livermore. This test is one of the most important for the year, as it shows oil on the south side of the fault and thousands of acres have been taken up for development, some before the well was completed. The owners have a block of about 4,000 acres under lease. They are from Indiana and eastern Kentucky. W. W. Johnson F. A. Johnson and Dr. Morris Johnson are from Vincennes, Ind., while Oliver Jenkins and two others are from Paintsville, Ky. When the drill was but 7 feet in the sand the well started spraying at intervals. The land where this well has been drilled is an area that is flooded many times during the year, sometimes several feet submerged as the Green and Rough Rivers unite at Livermore and floods are frequently caused on the low terrain thereabouts. Being so close to McLean County has caused a renewal of leasing in that county as well. In the Nation well a gas pocket was struck at a depth of 453 feet and another at 965 feet, then the third in the Brown sand at 1,320 feet, where also a slight showing of oil was found. It then entered the Barlow, where the real pay was found. The nearest pipe line is near Buford and when a couple more wells of value are found they can then ask for a connection.

Ohio-Daviess Areas

Few completions are reported from the Ohio-Daviess County areas on account of the 30-day shutdown to allow the pipe lines to clean up their stocks. The Messenger-Inquirer of Owensboro has this to say: "Shutting down new drilling by the 75 rigs in the Owensboro Field for 30 days will throw a good number of men out of employment for a time, but not entirely, as many will be retained in other employment on the leases for probably one-half the time during the period of inactivity. Not all of the rigs will cease drilling, as contracts that were entered into will be completed and some drilling of offsets and to retain leases will be done. Productive wells will be drilled to the sand and then halted until

(Continued on Page 74)

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Better Producers in the Eastern Fields

Although West Virginia and Southwest Pennsylvania Have Only Light Pumpers, Southeast Ohio Has Few Good Wells

By D. S. Wakenight
Staff Correspondent, Eastern Fields

PITTSBURGH, Pa., Dec. 30.—The week of development work in these southeast Ohio fields proved a little more fruitful of good producers. The number of wells completed was about the same. West Virginia and Southwest Pennsylvania completed nothing better than light pumpers and it is not probable either will furnish anything better unless a new pool is discovered. It is true, no extended effort has been made in that direction and the few wildcats completed have come in dusters or gas wells.

Southeast Ohio

In the northeast of Section 4, Harrison Township, Perry County, Ohio, McClay Brothers & Co. completed and shot in the Clinton sand a second test on the Karl W. Brown farm. It produced 140 bbls. the first 23 hours. In the SE of Section 30, Ward Township, Hocking County, A. H. Squire & Co. completed in the same formation No. 20 on the Cobb-Bradley farm. It was given a shot and the casing collapsed. It is showing for a black oil producer.

In the SW of Section 3, Clay Township, Muskingum County, Crowley, Carr & Co. completed in the Clinton sand a test on the Phoebe Frash farm. It produced 100 bbls. the first 24 hours after shot. In Section 16, Perry Township, the Wittmer Oil & Gas Properties completed a test on the Sarah L. Romine farm. It produced 90 bbls. the first 24 hours.

In Lot 35, Washington Township, Tuscarawas County, the Guernsey National Bank completed in the Niagara lime a second test on the Rachel Smetts & Co. farm. It produced 85 bbls. the first 24 hours at a total depth of 3,667 feet. In the NE of Section 33, Coal Township, Perry County, the Chartiers Oil Co. completed No. 214 on the Hocking Valley Products property. It produced 40 bbls. the first 24 hours.

In the NW of Section 29, Ward Township, Hocking County, the Preston Oil Co. drilled No. 1,366 on the Sunday Creek Coal Co.'s property through the Medina sand and dry. It was drilled to a total depth of 3,535 feet. It was then given a shot in the Clinton sand, but failed to respond and the hole was plugged and abandoned.

Holmes County

In Holmes County the Ohio Fuel Gas Co. is spudding in tests on the Elonzo M. Fodden and S. H. Sterling farms. In Hardy Township the same company is drilling on the Melissa Gamble farm. In the same district the Kemrow Co. is fishing near the top of the Clinton sand on the Louisa Conn farm. In Paint Township the Ohio Fuel Gas Co. is drilling in the Clinton sand on the Levi Yoder farm. In Monroe Township the Lydia Oil & Gas Co. is drilling on the A. R. Mackey farm. In Laurel Township, Hocking County, William Spangler has a rig up on the William McCaskey farm. In Madison Township, Perry County, the Atha Oil Co. has a rig up on the Melick Brothers' farm. In Independence Township, Washington County, the Reno Oil Co. has a rig up on the J. W. Goodman heirs' farm. In Perry Township, Licking County, the Pure Oil Co. has a rig up on the Hoover Brothers farm.

In Salem Township, Section 76, Washington County, Meister & Blair completed in the Maxon sand No. 9 on the Meister-Blair farm. It is a duster. In Section 126, Faring Township, Washington County, Fred D. Meister & Co. completed a second test on the William Berg farm. It is a very light pumper in the Peeker sand.

In Lot 8, Jackson Township, Coshocton County, the Pure Oil Co. completed a gasser good for 2,000,000 feet on the William McNaught farm. In Section 23, Washington Township, Hocking County, the Gordon Oil Co.'s No. 4 on the J. A. Kitchen farm is a gasser. In Section 16, Ludlow Township, Washington County, Homer Newhart and others completed a gasser in the Berea grit on the Charles and B. W. Rinard farm.

Noble County

In Section 18, Noble Township, Noble County, McKee Brothers completed a 3-bbl. pumper in the Berea grit on the Newton heirs' farm. In Section 5, Jefferson Township, J. H. Richardson & Co. have a duster in the Macksburg 500-foot sand. In Section 3, Wheeling Township, the Ohio Fuel Gas Co. has a gasser in the Berea grit at No. 3 on the J. W. Alloway farm.

In Section 17, Harrison Township, Perry County, J. W. Leonard completed a light pumper in the Clinton sand on the Durley-Winter Pottery Co.'s tract. In Sutton Township, Meigs County, the Twenty-Five Association completed No. 3 on the New Pittsburgh Coal Co.'s property. It is a 3-bbl. pumper in the Berea grit.

In the NE of Section 12, Cross Creek Township, Jefferson County, Braden, Spear & Co. have completed in the Berea grit No. 7 on the Jefferson County Infirmary property. The location is 300 feet west of the 25-bbl. producer on the Becker farm. It is good for 20 bbls. a day.

In Section 9, Deerfield Township, Monroe County, Joseph Pierce and others have a gasser in the Maxon sand good for 500,000 feet. In Section 36, Independence Township, Washington County, Hume Brothers & Co. have a Big Injun sand duster on the Charles Enoch farm.

Stark and Meigs Counties

In Section 1, Washington Township, Stark County, Canton parties have completed a light gasser in the Big Injun sand on the Oliver heirs' farm. In Sutton Township, Meigs County, Smith & Hawthorne have started to drill a second test on the A. E. Carnehan farm. In Section 13, same township, the Twenty-Five Association, Inc., has started to drill a second test on the Lucius Holter farm.

WEST VIRGINIA

In Union district, Ritchie County, the Carnegie Natural Gas Co. completed in the Gordon sand a duster on the M. L. Law farm. On Walnut Creek, Elk district, Kanawha County, the Virginian Gasoline & Oil Co. completed in the Squaw sand No. 15 on the A. P. Hayes farm, showing for a 6-bbl. pumper.

In Union district, Clay County, the Chalmers Oil & Gas Co. started to drill on the Connell heirs 350 acres. In Paw-Paw district, Marion County, the Carnegie Natural Gas Co. started to drill on the J. and Charlotte Price farm. In Clay district the same company is due in the sand on the R. F. McCool farm. In the same district the Chartiers Oil Co. is drilling a second test on the Marion Tennant farm. In Battelle district, Monongalia County, the Hope Natural Gas Co. is building a rig on the Elias Fox farm.

In Geary district, Roane County, the South Penn Oil Co. drilled No. 105 on the O. D. Stockly farm into the Salt sand. The location is 600 feet north of No. 103 and it is a gasser good for 500,000 feet. The South Penn Oil Co. has had remarkable success in development work on this farm.

Roane County

In Ready district, Roane County, the Heck Oil Co. has placed drilling material on the J. E. and J. G. Watkins farm. In the same district the Hope Natural Gas Co. has a rig up on the L. Vandale farm. In Ravenwood district, Jackson County, Edward Hess & Co. are building a rig on the Arthur S. Gray farm. In Sherman district, Calhoun County, the Hope Natural Gas Co. is rigging up on the F. S. Barr farm. In the same district the Southeastern Gas Co. has started to drill on the Hannah A. Linger farm. In Lee district, F. F. McIntosh has started to drill on the John I. McCoy farm. In DeKalb district, Gilmer County, the White Pine Oil & Gas Co. has rigged up on the H. A. Gainer farm. In Center district the Carnegie Natural Gas Co. has rigged up on the D. Stout farm.

In Clay County, Henry district, the South Penn Oil Co. completed in the Big Injun sand No. 7 on the James Phillips farm, 600 feet southwest of No. 6 and estimated good for 20 bbls. a day.

Boone County

In Sherman district, Boone County, the Pure Oil Co. has a gasser in the Berea grit at No. 40 on the Federal Coal Co.'s property. In the same district, Godfrey L. Cabot has a gasser at No. 3 on the Sutphin farm. In Crook district the United Fuel Gas Co. has a gasser at No. 1,877 on the F. Chew farm. In Peytonia district the Owens Bottle & Machine Co. Ira Sayers has a small gasser on the Skinner-Zirkle farm.

In Henry district, Clay County, the Virginian Gasoline & Oil Co. has a 5-bbl. pumper at No. 4 on the Brown, Swan & Goshorn tract. In Summit district, Mason County, R. P. Bell & Co. have a 5-bbl. pumper on the W. W. Riley, Jr., farm. In Grant district, Jackson County, Law & Lester's test on the Roy Kirkhart farm is a duster.

In Harvey district, Mingo County, the Two-Way Oil Co. has shot a test on the C. S. Messer farm. It produced 25 bbls. the first 24 hours. This well was previously reported as owned by the Wilsondale Land & Coal Co.

In Jefferson district, Lincoln County, the United Fuel Gas Co. has a gasser in the Berea grit at No. 3,906 on the Shady Estep farm. In the same district the Bark Camp Oil & Gas Co.'s second test on the G. C. Derrell farm is a gasser in the same formation. In Union district the United Fuel Gas Co.'s Nos. 3,975 and 3,810 on the Horse Creek Land & Mining Co.'s tract are gassers in the Berea

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PREPARING FOR DEEPER TEST IN MUSKEGON, MICHIGAN, FIELD

By Special Correspondent

MUSKEGON, Mich., Dec. 28.—Although no announcement has been made as to when drilling will start, the Reed Oil Co. has prepared for what its officials expect to be successful deep test developments in the Muskegon oil field by the erection of 10 standard rigs and a clean-out rig on the Muskegon River flats.

Seven of the rigs have been erected for some time over producing wells on three leases owned by the company on the north side of the river flats. Two others have been moved on a 20-acre lease purchased from the Puritan Oil Co. The tenth rig is lying on the ground near the site of a proposed new location.

All of the rigs are capable of drilling at least to the Niagara limestone which Reed company officials predict will be encountered at a depth of 3,000 feet or less on structure in the Muskegon Field. They are hoping for large gas production in the Niagara limestone, a large producer of gas in Canada. No wells have been drilled below the present lower producing sand known as the Dundee, according to Reed company officials, although there is some doubt in their minds as to whether it is the Dundee limestone or rather one or the other of the two formations included in the Monroe series and above the true Dundee.

From the start there has been a disagreement between state conservation officials and operators as to whether the so-called Dundee in the Muskegon Field were not the Detroit River, or upper Monroe, or the Bass Island, or lower Monroe dolomite and what is called the lower Traverse here actually the Dundee limestone.

R. B. Newcombe, assistant state geologist, has been in Muskegon to watch core drilling of parts of what is known as the Dundee formation but which Mr. Newcombe believes to be the upper Monroe, or Detroit River series.

The core drilling was done by the Reed Oil Co. on one of its wells on the Muskegon River flats in Section 8, Muskegon Township. Mr. Newcombe wished to watch the work of taking core sections of the formations to check with his investigation of other samples carried on at the Lansing headquarters of the geological division of the State Conservation Department.

"I am convinced that the big production in the Muskegon Field has been coming not from the Dundee limestone but rather from the Detroit River, or upper Monroe series," said Mr. Newcombe.

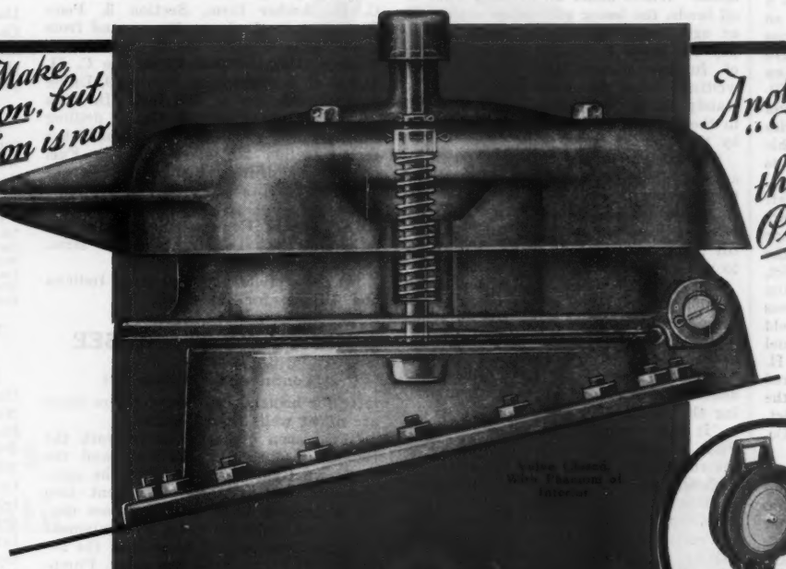
Mr. Newcombe has been preparing a joint paper on the subject with Dr. A. C. Lane, former state geologist, who spent the summer working in Michigan for the Pure Oil Co. The paper will be presented at the annual meeting of the Geological Society of America at Washington, D. C., December 26 to 28 inclusive.

The results of their joint study giving reasons for their belief that what has been known here as the Dundee in reality is the upper Monroe formation will be made public after presentation of the paper at the Washington meeting.

If it is decided that the big pay sand in the Muskegon Field has been the Monroe rather than the Dundee then it is reasonable to expect deeper formations including the Niagara limestone to carry oil and gas deposits perhaps greater than anything so far discovered. For if the Monroe has been struck at 2,000-50 feet, the formations are very high on structure and the Niagara may certainly be expected at 3,000 feet or less. If, on the other hand, it is proved to be the Dundee, as it has been called, prospects are not so bright for striking the Niagara at so shallow a depth.

Possibilities of greater pay in deeper formations, however, cannot be predicted. Nor can the lower formations on structure in the field be condemned until someone has drilled a deep test to prove what is there.

"Trifles Make Perfection, but Perfection is no Trifle."



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It operates at 16 ounces pressure or two ounces vacuum. When the pressure inside the tank reaches 16 ounces, the valve automatically opens. This safety device is regular equipment on B.S.&B. PERFECTION Vapor Pressure Tanks.

Likewise, with the vacuum valve. It operates at 2 ounces. When the tank is cooling after the heat of the day, or when the crude is being withdrawn the valve automatically lets in air to eliminate or offset the vacuum and prevents the tank from collapsing. It will relieve any vacuum caused by normal discharge of the tank through the pipe line.

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Black Wells & Beyson

BARTLESVILLE - OKLAHOMA

EASTERN FIELDS

(Continued from Page 72)

grit. In Carroll district the same company's No. 3,954 on the Wiley-Thompson farm is a gasser in the same formation.

Starting Tests

In Walker district, Wood County, G. C. Alleman and others have moved in a drilling machine to a second location on the Thomas Heckert farm. In the same district, L. B. Galbraith & Co. have placed a drilling machine at a location on the B. W. Foley & C. T. Smith's 50-acres. In the same district, the Penn Royal Oil Co. is rigging up on the Charles Smith farm. In Union district, Ritchie County, the Carnegie Natural Gas Co. is rigging up on the T. R. Vincent farm. In Murphy district, Davis & Bickerstaff have rigged up on the Claude Childers farm. In the same district, the Hope Natural Gas Co. is moving tools on the Cornelia Moats farm. In Troy district, Gilmer County, J. E. Trainer is building the rig for a second test on the Less M. J. W. Snider farm. In Smithfield district, Roane County, the United Fuel Gas Co. is building a rig on the D. H. Harles farm. In the same district, Fred Knapp & Co. are building a rig on the A. T. Farrell farm. In Reedy district, Roane County, the Reedy Oil & Gas Co. is drilling on the C. A. O'Hara farm.

In Geary district, Roane County, the Virginian Gasoline & Oil Co. has completed its test on the J. M. King farm. It is a 5-barrel pumper in the Big Injun sand. The location is 1,600 feet in advance of development. On Thoroughfare run same district, the United Fuel Gas Co.'s No. 4,022 on the E. W. Hardin farm is a fair gasser in the Big Injun sand.

Kanawha County

In Big Sandy district, Kanawha County, the United Fuel Gas Co. completed No. 3,971 on the S. D. Littlepage farm. It is a duster in the Weir sand. It is on Leatherwood run, 1,000 feet south of No. 4,020 on the same lease. On the same stream and district, the same company has a gasser in the Big Injun sand on the Brown & Swann farm.

In the Briscoe Field, Williams district, Wood County, the Summit Oil Co. completed a far gasser in the Big Injun sand on the T. W. Dankins farm. In Geary district, Roane County, the South Penn Oil Co. completed in the Big Injun sand No. 104 on the O. D. Stockly farm. It is a 10-barrel pumper. It is 600 feet north of No. 102 and on the same tract.

In Cameron district, Marshall County, C. B. & A. C. Patterson's second test on the Frank Howard farm is a gasser in the fifth sand. In Church district, Wetzel County, Spencer Stockdale has completed a test on the William Hixenbaugh farm. It is dry and abandoned. In McClelland district, Doddridge County, the Little Five Oil Co. has an 8-barrel pumper in the Gordon sand on the Samuel Gainer farm.

Southwest Pennsylvania

In Springhill Township, Greene County, the Peoples Natural Gas Co. has a fifth sand gasser on the Patrick Taylor farm. In Shaler Township, Allegheny County, R. A. Marshall have completed a test on the Slag farm. It is a very light pumper. In the same township, J. S. Walley & Co. completed No. 3 on the Mary Hoffman farm, showing for an 8-barrel pumper in the 30-foot sand. In O'Hara Township, A. M. Christian has a 4-barrel pumper in the same formation on the Meister farm.

In South Franklin Township, Washington County, the Carnegie Natural Gas Co. has a gasser on the Adam Weir farm. In West Bethlehem Township, the same company has a gasser on the A. Smith farm. In South Franklin Township, the same company has a gasser on the Harry Lafer farm. In Moon Township, Allegheny County, Bell & Co. have a light pumper in the 100-foot sand on the Mrs. Kate Dilley farm.

In Robinson Township, Allegheny County, M. Matkovich and others have drilled their test on the Pittsburgh Coal Co.'s property through the fifth sand. It is dry in that formation but will make a light pumper in the Gordon sand.

CHANGE IN OWNERSHIP AND LEASE OBLIGATIONS

By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 30.—A change in ownership does not affect obligations assumed by a lessee of oil lands. Where under an existing lease of oil lands, the lessor and lessee enter into an agreement whereby the lessee was to pay the lessor a definite amount in lieu of further construction of wells, the writings must be construed from the standpoint of both lessor and lessee and in the light of their rights already fixed by the existing lease.

The owners of the royalty interest in a leasehold of oil lands and the owner of the working interest have such an interest in the land as to amount to a privity of estate between them sufficient to fulfill the requirement of privity necessary to make a covenant run with the land.

The foregoing holdings epitomize an opinion handed down in the court of appeals for the State of Kentucky by Judge Logan in the case of the Swiss Oil Corp. vs. A. R. Dials and others.

After an extended review of the evidence of this case Judge Logan, affirming the judgment below, said:

"It is the general rule that in order to make a covenant run with the land of the covenantor and binding his heirs and assigns, the covenantee must have such an interest in the land as to amount to a privity of estate between the parties to the covenant; and strictly speaking such privity must exist between the parties when the covenant is made. There is no doubt that the owners of the royalty interest in the leasehold and the owner of the working interest had such an interest in the land as to amount to a privity estate between them. When appellant became the owner of the leasehold, it was under the duty to assume the burdens placed thereon by its predecessors in title. The terms of the contract are enforceable as written."

CENTRAL WEST FIELDS

(Continued from Page 70)

65 feet. Smith & Watterson are drilling a second test on the A. E. Carnahan farm, Section 11. In Rutland Township, T. Chase and others are drilling on the Florence Mutchler farm, Section 9.

In Vinton County, Knox Township, the Co-operative Oil Co. has made locations for Nos. 1 and 2 on the Cameron Clark farm, Section 4, and is now drilling No. 3, same farm. Bell and others are drilling No. 4 J. W. Stanley farm, same section. Ohio Fuel Gas Co. is drilling No. 1-4,880 on the Charles C. Karns farm, Section 34, Swan Township.

In Tuscarawas County, Washington Township, the Gordon Oil Co.'s No. 1 on the Thomas and Rose Shearer farm, Lot 34, is reported good for 60 bbls. initial from the Niagara lime from 3,498-3,505 feet.

Stark County

Two remarkably fine gas wells were found in Lawrence Township, Stark County, which means a new field to explore. The Penn Oil & Gas Co.'s test on the Adam Limbach farm, Section 2, is one, the Stray sand being dry from 3,885-3,903 feet, the gas being found in the Clinton from 3,909-59 feet. The other is owned by F. A. Brendall and others, being a test on the Charles Smith farm, Section 3, which was also dry in the Stray sand from 3,835-50 feet, the gas coming from the Clinton at 3,-850-3,928 feet.

In Scioto County, Porter Township, Browning Brothers got a showing of gas in the Berea from 680-740 feet, on the J. Adams farm, Section 21, and shut down. In Green Township, same county, Demick Brothers' test on the Albert Feurt and others farm, Lot 19, is shut down at 1,432 feet.

In Guernsey County, Wheeling Township, the Ohio Fuel Gas Co.'s No. 1-4,-842 on the Amanda E. Robinson farm, Section 11, produced 25 bbls. initial in the lime sand below the top of the Niagara, at from 3,569-72 feet, total depth 3,575 feet. Same company is drilling No. 1-4,911 on the Simon Umstatt farm, Section 2, same township.

In Morgan County, Marion Township, the Ohio Fuel Gas Co.'s No. 3-4,910 on the Hugh Ellis farm, Lot 4, was dry from 695-733 feet. Choquill and others have a light gas well in No. 13 on the C. H. Archer farm, Section 3, Penn Township, in the lower Berea sand from 1,406-31 feet, total depth 1,434 feet. Squires Brothers' No. 13 on the C. H. and F. C. Kincaid farm, Section 9, Union Township, is dry at 550 feet. In York Township, the Pure Oil Co. is drilling in the Berea sand on the Jacob Fisher farm, Section 20, and the Ohio Fuel Gas Co. is drilling No. 1-4,916 on the Mary A. Kountz farm, Section 27, same township.

In Belmont County, W. C. McBride is drilling on the D. L. Hague farm, Section 1, Somerset Township.

No completions reported from Indiana and Illinois for the week.

KENTUCKY-TENNESSEE

(Continued from Page 70)

later for bringing in, except where there are offset wells being pumped.

"Four men are required to work the two tours during the drilling, and the shutdown time will be used by the operators in getting their equipment into shape, putting tools into first-class condition and making repairs on equipment that has been put off because of the necessity for keeping the rigs going. Pumpers, shackle-line builders, woodchoppers and other laborers will continue at work so that there will be little hardship on the field workers. While there will be but little added production, the oil from active wells will continue to be pumped, with gaugers and pipe line tenders keeping up their work during the time. The actual number of men that will be temporarily laid off probably would have taken off to go to their homes at distant places for the holidays anyway.

Forecast Development

"As soon after the shutdown period as practicable, and especially with the opening of spring the greatest development the Owensboro Field has yet had will get under way. A year ago, it will be remembered, the forecast was made that unusual development would be brought out during the season to follow and this was borne out to a large degree. An influx of additional operators in the last few weeks has been such as to justify the further forecast of unusual development in the year to come. Pools that have just been touched, and others that are known to be lying dormant, will get a play during the coming year by new blood that will make this field a 25,000-bbl. a day production. The field already had reached the point of 19,000 bbls. per day with additional stuff in view to keep up the grade and put on more production. The shutdown that went into effect December 15 and which is to continue to January 15 is due largely to the inability of the pipe lines to care for the production.

"Taking over of the Illinois Pipe Line Co.'s local property by the Ohio Oil Co. is looked on by the local oil men, according to their expressed opinions, as being a step toward enlarging the capacity of the transportation facilities in this field. The Ohio Oil Co. is a large producer in this field and buys the greater part of production. The fact no cut in price will be made during the 30-day period of the shutdown was welcome news to the operators, as they had feared this for some time previous to the shutdown."

Ohio County Wells

In the Howard Pool of Ohio County, J. E. Hare's No. 4 on the W. L. Howard 20 acres pumped an initial of 10 bbls. In this well a string of 402 feet of casing was set, and the pay sand was from 410 to 420 feet.

Armistead Oil Co.'s No. 3 Arnold Newton 38 acres in Ohio County pumped 10 bbls. initial from the Jett sand.

E. G. Purtle and others' test on the Charles Roach north 130 acres, in the Whittaker Pool in northern Ohio County, was a duster.

Cumberland Petroleum Co.'s second test on the G. W. Kirk 124 acres was a dry hole at 400 feet, and the Petroleum Exploration Co.'s No. 2 M. W. Rhodes 92 acres was also a dry hole.

Daviess County Well

Only one completion was reported from Daviess County, the Penn-Indiana Oil Co.'s No. 11 on the First National Bank and Southwest Trust Co.'s 163 acres, in the Jones Pool near Whitesville, which produced but 6 bbls. initial.

Week's Work

A summary of the week's work in Kentucky shows 15 completions, 10 producers with an initial production of 57 bbls., 3 dry holes and no gas wells.

County—	Comp.	Oil wells	Prod.	Dry
Ohio	5	2	20	3
Daviess	1	1	6	0
Wayne	6	4	22	2
Lawrence-Johnson	1	1	5	0
Wolfe	1	1	3	0
Estill	1	1	1	0
Total	15	10	57	5

Eastern Kentucky

In the Monticello Field of Wayne County, District 3, Smith-Carmon Co.'s No. 2 Clint Bell was a duster. Bain & Hogue's No. 3 Silas J. Burnett pumped 5 bbls., and the Pigeon Rock Oil Co.'s No. 13 on the Stearns Coal & Lumber Co. tract pumped 5 bbls. initial. In District 13, same county, William O. Southern, Jr., No. 11 Nancy Jones and others farm, pumped 2 bbls. Harmon & Funk's test on the O. D. Catron pumped but 1 bbl., while D. Shearer's No. 7 Coyle heirs farm, same district, was a duster.

In Wolfe County, Torrent Field, District 20, Amy Burnett's No. 2 on the J. P. Bush No. 2 farm, pumped 3 bbls. in 24 hours.

In the Irvine Field of Estill County, District 7, the Gate City Oil Co.'s No. 9 on the John and Patsy Marcum farm, pumped but 1 bbl.

In Lawrence-Johnson Counties, District 32, the Swiss Oil Corp.'s No. 34 Jesse Lyons farm pumped 5 bbls. initial from the Weir sand.

From six to eight tank cars of oil are being loaded daily in the Greenfield Field from the wells of the Ohio Oil Co. and those of Ellis, Young & Rowe and shipped by the Illinois Central to the refineries in Louisville.

Advice from Madisonville is that the Ohio Oil Co. has what indicates a large oil producer in the vicinity of Kirkwood Springs, in Hopkins County, Kentucky, at a depth of 2,000 feet.

S. R. Nigh and others are drilling Nos. 13 and 14 on the A. P. Kelley 340 acres in the Deanfield area of Ohio County. S. R. Berry and others are drilling on the Jake Smith farm in the vicinity of Adaburg, and H. B. Cameron and others are drilling No. 1 on the S. W. Foreman 67 acres, same area.

MERCO NORDSTROM CHANGES

Several promotions have been made in the organization of the Merco Nordstrom Valve Co., San Francisco. Comfort E. Brown, eastern divisional manager, has become vice president in charge of sales, continuing his headquarters in New York. C. C. Evernham, western divisional manager, becomes purchasing agent in charge of all purchases and will be stationed in San Francisco. E. D. Rogers, southern divisional manager, is now general sales manager with headquarters in the San Francisco office.

C. A. O'KEEFE DIES

C. A. O'Keefe, 78, a former partner of the late Colonel C. C. Slaughter of Dallas, afterward an independent ranch owner in West Texas and controlling extensive financial interests in Fort Worth, Tex., died at his home last week, after many years of ill health.

In 1917 he formed the firm of O'Keefe & Collett in Fort Worth, with J. D. Collett, and entered the oil business, interest in which he retained up to the time of his death.

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Natural Gas Developments

GAS MERGER REPORTED IN PROGRESS ON PACIFIC

It is understood, says a Wall Street Journal San Francisco dispatch, that negotiations are in progress by which a new subsidiary may be formed to be jointly owned by Pacific Gas & Electric Co. and Pacific Public Service Co., the latter a subsidiary of Standard Oil Co. of California. This new company would hold and operate for the mutual benefit of the two parent companies, natural gas lines running north from the San Joaquin territory.

Pacific Gas has completed and is operating one gas line and last month started laying a second line. In the meantime, plans of Pacific Public Service have come to a head, resulting in an offer to join with Pacific Gas to avoid laying competitive lines. These plans are understood to be acceptable to Pacific Gas. The agreement does not cover the allocation of distribution territory which had previously been practically arranged.

It is possible that the second line running north from the San Joaquin Fields, now under construction by Pacific Gas & Electric, may be jointly financed by the company and Pacific Public Service, instead of being solely a Pacific Gas & Electric development. The Pacific Gas controls the main distribution areas and Standard Oil will probably eventually control the main Kettleman Hills gas resources. Standard Oil of California has announced its intention to develop the use of natural gas through the areas in central California served by Coast Counties Gas & Electric Co., subsidiary of Pacific Public Service Co. Standard Oil of California owns in fee approximately 50 per cent of the Kettleman Hills oil and gas field, which, during the past year, has been discovered to hold enormous potential natural gas production in addition to crude oil reserves.

Pacific Service Co., Standard Oil of California subsidiary, is the holding company for Coast Counties Gas & Electric Co., Consolidated Water Co. and California Consumers Co. The company earned the equivalent of $2.60 a share in the 12 months ended October 31, with but 14 per cent of its gross revenue accruing from gas sales contributed by Coast Counties Gas & Electric Co., whereas preliminary surveys indicate prospects of increasing gross revenues approximately $1,000,000 annually over a short period by the extension of its natural gas service.

While gas sales approximated 2,000,000 feet a day during 1928, sales are expected to develop to more than 80,000,000 feet daily. This estimate presupposes sales to a dozen important industrial plants now using fuel oil, which could more economically utilize natural gas in their operations. There are four refineries which are believed capable of taking 41,000,000 feet daily and numerous smaller industries, which, it is estimated, could consume an additional 20,000,000 feet.

Large potential users of natural gas are the new United States Steel Columbia plant, California Packing Co., Hercules Powder, American Smelting & Refining, California & Hawaiian Sugar Co., Fibreboard Products, the new rubber plants and the paraffin companies. Natural gas is considered the most economical fuel in California, averaging, at maximum current prices, 30 per cent below the cost of coal and 20 per cent under the cost of fuel oil, with greater efficiency possible because of the facility with which supply can be controlled and the elimination of storage facilities.

OKLAHOMA NATURAL RECORD

Thomas R. Weymouth, president of Oklahoma Natural Gas Corp., announced that deliveries of natural gas to customers of the corporation on December 18, 1929, were 203,000,000 feet, constituting the largest quantity delivered in any day by the corporation during its entire 22 years of operation. The corporation's gross and net earnings are showing consistent increases over 1928. Its gross earnings for the 10 months ended October 31, 1929, were $8,653,906.62, compared with $7,995,364.33 and its net operating income after all operating expenses, maintenance and taxes for the period were $3,538,000, compared with $3,017,000 for the corresponding period of 1928.

HOUSTON OFFICIALS MEET GAS COMPANIES

HOUSTON, Tex., Dec. 30.—George H. Pruter, city business manager, and Sam Neathery, city attorney, are in a conference with representatives of the Houston Gulf Gas Co. for the purpose of having reduced the rate charged by that company to the city for the Magnolia Park plant.

The city is now paying 30 cents per thousand feet for gas. The Houston Gulf Gas Co. is selling private industries gas at the rate of 16 cents per thousand feet, according to Mr. Pruter. He believes the city should receive the same rate as private industries.

City authorities also are expected to ask the Houston Gulf Gas Co. to charge the Houston Gas & Fuel Co. a lower rate.

Mr. Pruter and Mr. Neathery conferred with officials of the Houston Gas & Fuel Co. recently. Mr. Neathery offered to compromise with that company on the city's claim for $10,100 as its share of excess profits for 1925. Mr. Neathery offered to settle for between $7,000 and $8,000, it is understood.

PLAN 175-MILE LINE FROM BROWNWOOD, TEX.

Natural gas pipe line system of South Plains Pipe Line Co., a subsidiary of Prairie Oil & Gas Co., will be extended to Big Spring from a point on its trunk line which runs from Amarillo gas field to Lamesa and other South Plains towns. The new line will augment the present supply of gas here, which is being furnished by Big Spring Public Service Co.

Metropolitan Bond & Share Co. of Dallas has obtained franchises for supplying natural gas to towns of Zephyr, Mullin, Goldthwaite, Lometa and Lampasas and will construct a 175-mile line from Brownwood to these points.

MEMPHIS NATURAL GAS

Memphis Natural Gas Co. reports for November output of 781,000,000 feet, against 676,392,000 feet in October, an increase of more than 15 per cent.

During the first eleven months of the year the company, which started operations last January when its output was 114,387,000 feet, states it has earned substantially in excess of its bond interest and preferred stock dividend requirements. This record, the company states, was achieved notwithstanding the company was not in position to take advantage of the seasonal peak in gas consumption last winter, and has not been able to derive full benefit from its sales contracts this year because of the time required by the purchasing companies to effect connections both with the Memphis Natural Gas Co's pipeline and with its customers.

GAS AS THE IDEAL FUEL GAINS IN POPULARITY

By B. J. Mullaney
President, American Gas Association

Expansion into new fields of usefulness and a most extensive development of existing markets has marked the year 1929 in the gas industry of the United States. The indications for the year, 1930, are that this growth will continue during the new year in about the same ratio as that of the year just closing. This anticipated growth is predicated upon the new trends and changing conditions, such as the increase of large-volume industrial use of gas, accelerated use of gas for additional domestic purposes, including central house heating and refrigeration. Expansion is further stimplated by the growing popular recognition of the superior advantages of gaseous fuel, and by the continuous program of research, conducted by the American Gas Association that is developing new uses and greater efficiencies and economies in methods of utilization.

In 1928 the combined revenues of the manufactured and natural gas industry aggregated $875,000,000, an increase of nearly 8 per cent over the preceding year. At the close of 1929 the combined revenues of the industry mounted to $950,000,000, a gain of nearly 9 per cent. At the close of 1928 the industry's customers numbered 16,000,000, a gain of more than 500,000. As we enter the year 1930, the gas industry has a clientele of upwards of 17,000,000, a gain of almost one million customers. To the service of these customers is dedicated an investment of approximately $4,750,000,000. During the coming year the industry will, according to our recent estimates prepared for the business conference called by President Hoover, expend in the neighborhood of $425,000,000 in the construction of additional facilities for enlarged service, and another $50,000,000 for the maintenance of existing service facilities.

The financial position of the industry is generally conceded to be excellent. A summary of the financial status recently prepared by one of the leading investment banking houses, estimates for the coming year that the production of gas, both manufactured and natural, will exceed 2,000,000,000,000 cubic feet, that the total investment in the industry will cross the $5,000,000,000 mark and that revenues from the sale of both manufactured and natural gas will more nearly approach $1,000,000,000 total.

Gas industry growth, while unspectacular, has been marked and steady for upwards of twenty years. In the past four years, and 1928 outstripped all previous years, tremendous strides have been made in the efficiency and economy of transporting gas. The tensile strength of pipe has been increased to withstand the high pressures; methods of preventing its rusting and deterioration have been devised which extend the life of this equipment materially; efficiencies and economies have been introduced into every department of its production, transportation and distribution, resulting in a much different estimate of the industry and the value and the perpetuity of the service it renders, than has ever before been obtained.

In consequence of these advances, particularly in the natural gas branch of the industry, the past few years have witnessed remarkable activity in the building of long trunk lines for the transmission of gas, mostly in the Southwest and West. This activity has been attended by the development of great producing areas containing vast reserves, which coupled with large increases in production, is making the transmission of natural gas to even greater distances than it is now propelled economically practicable.

The great Monroe and Richland Parish gas fields in Louisiana, the "Panhandle" and numerous other prolific producing areas in Texas, and in California, the Kettleman Hills and other big fields, offer to the people, even those hundreds of miles distant, this ideal fuel in hitherto undreamed of quantities.

Main trunk line building is well under way. This will, of course, be followed by years of active expansion and extension of small lines from the main trunk lines, first to the larger communities and later to the smaller centers. The consolidations of separate lines are already beginning. In all likelihood there will ensue an era of gradual consolidation, with physical connections and tie-ins following, similar to phases which the electric light and power industry have experienced in recent years, and which is very strikingly evident at this time.

In view of these possibilities for growth let me urge all those engaged in the gas industry, regardless of what branch they may be identified with, whether it be in operations, in finance, in commercial sales, or the allied branches of appliance and machinery manufacture, to support with undiminishing enthusiasm the activities of the American Gas Association for increased effort in its program for research work, for the development of more economic and efficient utilization methods for gas in industry, in commerce and in the home; for a keener appreciation of the obligations of the sales opportunities of our business; for the whole-hearted and unstinted co-operation of the entire industry, through its association, to the end that the industry's growth may continue in the same gratifying ratio as it has in the past.

GREATER GAS MERGERS EXPECTED THIS YEAR

It is learned, says the New York Times, that several of the projects affecting the principal transmission and natural gas pipe lines completed or planned in many states extending along the Atlantic seaboard from north to south and in the Mississippi Basin from the Great Lakes to the Gulf of Mexico may be eventually the backbones of larger public utility groups than yet constituted. While some groupings may take years to form, the more enthusiastic commentators look for several outstanding developments of this nature before many months have passed.

Leading public utility engineers are hopeful of creating electric power and gas systems that will be linked up eventually in vast nation-wide networks similar to the Bell System in the telephone industry. Although few look for a single ownership of such systems before many decades, it is predicted that operations of the vast networks as though they constituted a single unit will become possible at a comparatively early date, and probably within the next five years.

ST. THOMAS GAS PLANT

CHATHAM, Ontario, Dec. 30.—The St. Thomas, Ontario, city council has engaged Frederick Burnett, gas engineering expert, of Toronto to report on the modernization of the municipal gas plant, acting in conjunction with Supt. Robert Christie. At the same time the Dominion Appraisal Co. of Toronto will make a valuation of the plant. Proposals by various companies, including the Southern Ontario Gas Co., to take over the plant, have been mooted, as well as proposals to supply natural gas and mixed gas.

IDEAL

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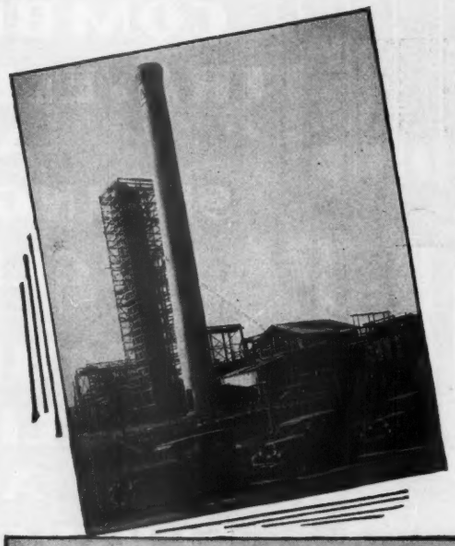

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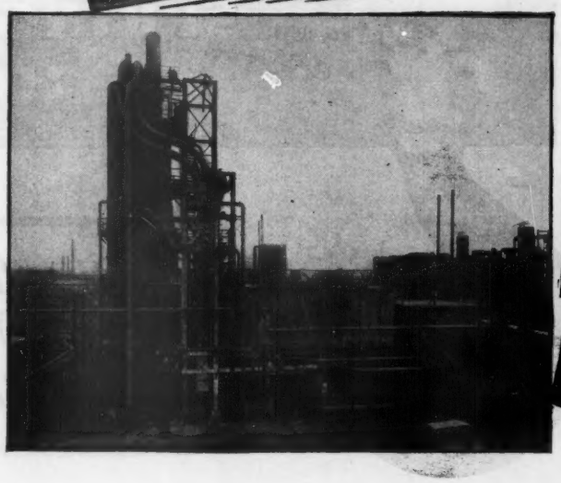

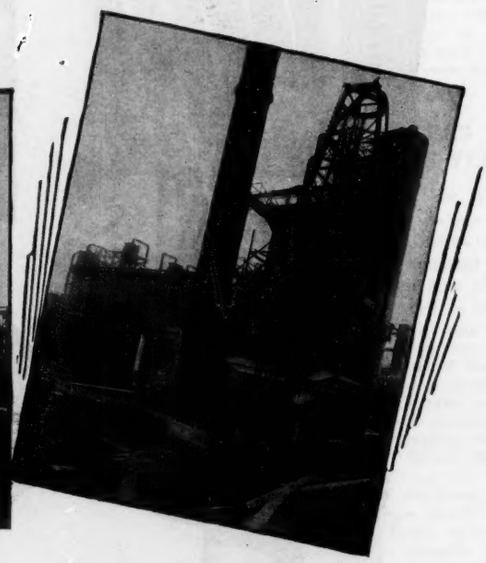

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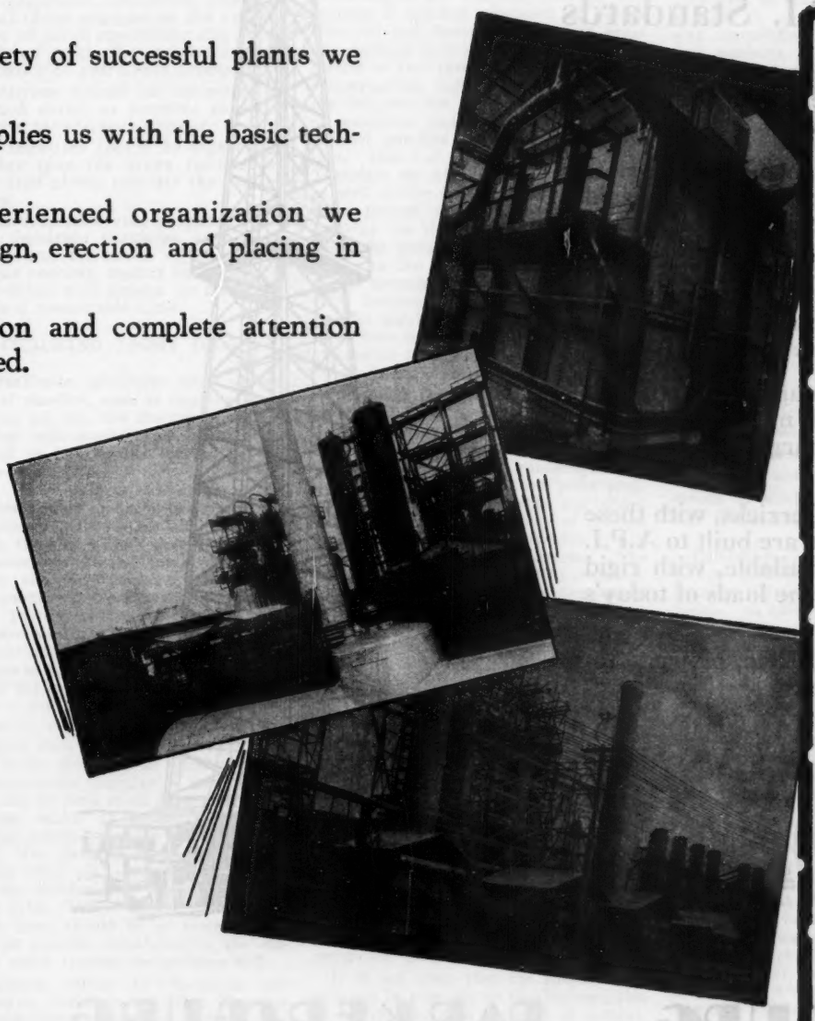

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Tide Water Oil Co.
Anglo-Persian Oil Co., Ltd.
Empire Refineries, Inc.
Marland Oil Co.
Vacuum Oil Co.
Associated Oil Co.
Barnsdall Corp.
Humble Oil & Refining Co.
Tidal Refining Co.
Standard Oil Co. of N. J.
General Petroleum Corp.
Beacon Oil Company
Lubrite Refining Co.
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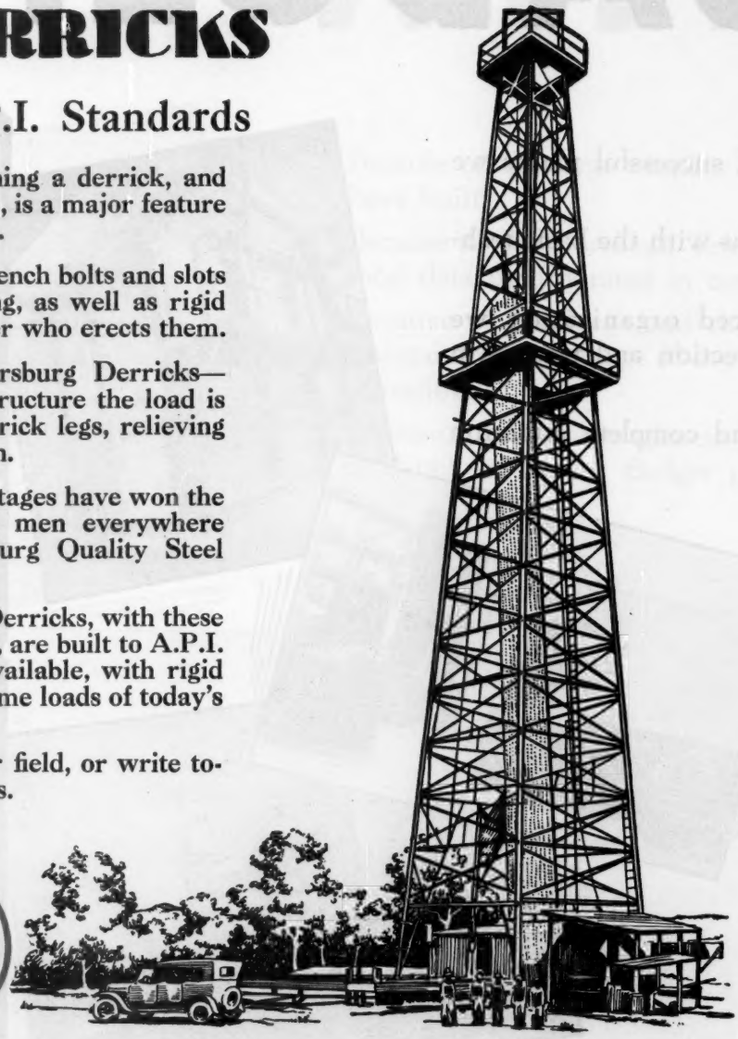
And now, Parkersburg Steel Derricks, with these important time-saving features, are built to A.P.I. standards. Three types are available, with rigid strength to withstand the extreme loads of today's and tomorrow's deep drilling.

See our representative in your field, or write today for specifications and prices.



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Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

CRACKING LIGHT OILS

If distillates, containing small percentages of gasoline, such as naphtha, kerosene, gas oil, etc., are charged to a . . . cracking still would such gasoline be changed or lost in the cracking operation?—H. E. H.

Under a fixed condition of temperature and pressure, the larger the molecule; that is, the longer the hydrocarbon chain, the easier does the cracking proceed. The heavier oils yield more gasoline for a given quantity and period than the lighter ones. There is always a tendency toward the formation of a smaller molecule and therefore more volatile product. In the presence of light material a proportionate part of the energy must be used in working on it and consequently production and the quality of the distillate are involved.

Seldom does the refiner charge anything to the pressure still which contains any appreciable quantity of gasoline but there may be some small quantity of light material, which is within the boiling range of gasoline, present in the charging stock. The quantity of any such light fraction that may be present reflects upon the efficiency of the previous distilling units. Where adequate towers are in use there should be no more than a trace of gasoline remaining in the distillate which reaches the pressure still.

A recent article by Sachanen and Tilicheyev, Influence of High Pressure Cracking, The Oil and Gas Journal, November 28, 1929, page 46, discusses some phases of the subject, as indicated in the quotation following:

"The investigation of cracking of naphtha fractions indicates that these fractions are also decomposed under the influence of the cracking temperatures, the rate of this decomposition being lower than that of heavier crude oil fractions or crude oil products. Nevertheless approximately 15 per cent of naphtha are cracked in one hour at 425 degrees Centigrade or in 10 minutes at 450 degrees Centigrade, forming about 5 per cent of light gasoline and gas, calculuated on the original product. It is evident that the gasoline fractions by themselves are also decomposed under the influence of cracking, although the velocity of their decomposition must be still lower than for naphtha fractions. It follows therefore that the gasoline formed during the process of cracking is also further decomposed on remaining under the influence of cracking, as for example in reaction chambers.

"Considering the average concentration of gasoline in the reaction chambers as being 15-20 per cent and taking for granted that gasoline is decomposed in the same way as naphtha, the amount of gasoline decomposed to gases in the reaction chambers during these 30 minutes would not exceed 2-3 per cent on the original product. The balance of the gasoline (4-6 per cent on the original product) decomposing under the conditions prevailing in the reaction chamber, will produce a gasoline composed of lighter fractions and therefore would not cause any decrease in the gasoline yield. As a matter of fact these figures, on gasoline decomposition, will be still lower due to the fact that the speed of decomposition of gasolines and particularly that of cracked gasoline is considerably lower than that of straightrun naphtha. Therefore the high pressure in cracking as well as the holding back of the gasoline formed under the conditions of cracking (in the reaction chamber) (for about 30 minutes) merely causes a decrease in the yield of cracked gasoline, due to decomposition, of probably 1-2 per cent, forming therefore 28-29 per cent cracked gasoline instead of 30 per cent, if we take this as a final practical yield of gasoline from a single cracking operation with gas oil or any similar product.

"However, the detention of the cracked gasoline formed under cracking conditions might have another detrimental action besides decomposition. This consists in the process of condensation of unsaturates into high boiling point products which may be possible and which cause a decrease in the yield of cracked gasoline which is a product with a boiling range of a known character. The condensation of unsaturated hydrocarbon in cracked gasolines and the decrease of unsaturated compounds in the latter at high pressures has been proved by the authors in many cases."

SULPHUR CONTENT AND STABILITY OF LUBRICATING OIL

We have two lubricating oils for transformer use and the one containing the highest percentage of sulphur forms less emulsion and less sludge is deposited from it in the transformer. Have you any theory to explain this?—G. H. N.

Without more details concerning other properties and conditions under which these oils are used it is impossible to give more than a statement of some well recognized principles.

It is not clear that the sulphur content can be regarded as an absolute guide as to what may be expected of a lubricating oil in service. The presence of gums and unsaturated hydrocarbons, together with the extent to which the oil has been heated in the refining process, may be mentioned as being among the important elements which influence stability. It is known that oils containing small quantities of naphthenic acids do not emulsify very readily. As a general rule the degree of refining is reflected in the behavior of a lubricating oil; that is, the more highly refined oil having no color and approaching pure hydrocarbons in composition will be liable to show a low value as to emulsification and tend to deposit no sludge.

Mizushima and Yamada have suggested in Petroleum Times, volume 22, page 900, November 9, 1929, that sulphur may act as an antioxidant. Their statement follows:

Though sulphur and its compounds have been hitherto considered to be one of the important factors which accelerate the oxidation of petroleum oils, this consideration has been derived only from the results of the experiments upon the sludge-forming character of oils.

Notwithstanding the above-mentioned idea of accelerating action of sulphur, therefore, the authors had a suggestion that sulphur in petroleum oil may act as an antioxidant, and this suggestion was ascertained by the following experiments:

Sulphur, 0.1 per cent, was added to a refined, white transformer oil containing 0.023 per cent sulphur, and oxidized with oxygen at 86 cm. pressure for 100 hours at 120° C. A parallel test was made with unmodified oil. Comparing these two products of oxidation with their acidity, tar and water formation, the result was that, whereas the oil containing no extra sulphur was strongly oxidized with the formation of large quantities of tar and water, the oil with added sulphur resisted oxidation in almost perfect degree.

As the results of another experiment, it was shown by the addition of a small percentage of sulphur, paraffin wax may be also guarded against the oxidizing influence of oxygen under the same condition as given above.

ADMIRALTY METAL, KRUPP METAL AND CORROSION

We note in the December 12 issue of The Oil and Gas Journal the mention of Admiralty metal and Krupp metal in the article on corrosion which starts on page 46. As we are not familiar with these metals we would be pleased to have further information about them.—M. O. B.

References to Admiralty metal and Krupp metal from the article by Walter Samans, "Many Phases to Refinery Corrosion," as cited, are reproduced.

Admiralty metal is a brass containing copper 70 per cent, zinc 29 per cent and tin 1 per cent. Krupp metal is a special steel containing nickel, which has been extensively used as armour plate in the construction of German war vessels. The references follow:

In the case of sulphur corrosion, chromium-iron and chromium-nickel-iron alloys have proved themselves to be highly resistant. These alloys, however, are not highly resistant to the hydrochloric acid corrosion such as exists in the cooler portions of the apparatus. For these locations, the nonferrous alloys appear best suited. Admiralty metal tubes are finding favor in such low temperature apparatus as gasoline condensers and coolers. They are also being used, to more limited extent, in refluxers and partial condensers. The selection of such metals, however, should be made only on a basis of economy.

	Per cent loss in weight in 6 months
Cast iron	0.11
Wrought iron	0.55
Mild steel	1.35
Commercially pure nickel	0.72
Commercially pure chrome	0.00
Commercially pure cobalt	0.73
Commercially pure zinc	1.80
Commercially pure copper	11.29
Commercially pure aluminum	0.13
Commercially pure tin	0.37

The above tabulation gives results of corrosion tests on various metals under conditions such as found in the reflux of partial condensers used to control the specifications of a gasoline stream, where the corrosion is due to both sulphur and acids due to the presence of chlorides in the crude. The crude contained 0.273 per cent sulphur and 35 pounds of salts per 1,000 bbls., or 25 gallons of salt water per 1,000 bbls. The samples were located below the refluxer which controlled gasoline. The gasoline stream showed 0.065 per cent sulphur.

When interpreting these results, it should be borne in mind that the samples reached the temperature of vapors and reflux, which was about 400° F., a condition that does not prevail in the inlet headers and tubes of refluxers, where cold entering liquids cause condensation of steam. Therefore, the bulk of the above loss in weight is due to sulphur corrosion.

Return bend plugs made of Krupp metal have proved superior to aluminum bronze plugs, and are equally efficient since they have approximately the same coefficient of expansion. Krupp metal is being used successfully for small parts such as thermocouple wells, seats and discs of valves, pump vales and pump rods, and other minor parts.

SOLID CARBON DIOXIDE FROM NATURAL GAS

Please let me know through the columns of the Journal your opinion of the practicability of manufacturing dry ice from natural gas, also carbon dioxide in the gas state, as compared with other methods.—R. E. B.

There are very few gas wells that show enough carbon dioxide to suggest that they may prove a profitable source of carbon dioxide. Most of the natural gas contains no more than a trace of this gas, and at most just a few per cent; however, there are some exceptional wells which produce almost pure carbon dioxide. If these sources were near enough to a market, especially a large city, there would be some commercial possibilities. The wells which produce large volumes of gas containing a high percentage of carbon dioxide are located far from the sections where the gas, and its products, are utilized. Notable carbon dioxide wells are to be found in Colorado, Wyoming and California.

The November issue of The Conoco Magazine, page 26, contains a description of a large carbon dioxide well which was drilled near Walden, Colo. The gas production was 34,000,000 cubic feet a day, with 300 bbls. of straw color oil. The temperature of the gas at the well is 136 degrees below zero.

"Engineers say that enough carbon dioxide flows from the well to make possible the manufacture of six times the present output of 'dry ice' in the United States. Dry ice is nothing more than solidified carbon dioxide which is being used as a refrigerant. It is extremely cold and absolutely dry. It would be possible to manufacture 1,500 tons of dry ice a day from the Walden gas flow. The news that the gas was noninflammable was a great disappointment. The Bureau of Mines analysis was as follows: Carbon dioxide 91.82, oxygen 0.63, methane 2.76, ethane 1.89, nitrogen 2.90. The gravity of the oil was 52."

The rock pressure in the above well is reported to be 800 pounds to the square inch and this would explain the extreme low temperature as due to expansion. The boiling point of carbon dioxide is 108° below 0° F. It may be reduced to the liquid condition with slight increase in pressure. At 32°, the freezing point of water, carbon dioxide may be liquefied under a pressure of approximately 525 pounds to the square inch.

Methods of extracting carbon dioxide include absorption in water, formation of carbonates by passing over hydrated lime, lime, caustic soda and other alkaline substances.

Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

EFFECTS OF SWABBING

It has been my experience that swabbing an oil well causes a greater increase in the amount of gas produced than it does in the amount of oil. Is this always the case? Can you tell me the reason for it?—N. S. T.

It is rather difficult to state whether the increase in gas would always be more than the increase in oil in swabbing wells, but it would seem to be true that this method of recovery of oil would set up conditions that permit a greater amount of gas to flow into the well, for the swab creates a reduced pressure on the sand and under such a condition it is only logical to assume that the gas would move into this zone of reduced pressure more rapidly than the oil.

When the swab starts from the bottom of a well it is in effect a piston within a cylinder and lifts the oil above it and exhausts the space below it. In this way it creates a part vacuum within the casing and above the sand.

Under such a condition the oil and gas would move toward the hole, but the gas being less viscous than the oil would move through the sand body more rapidly than the fluid and on the next run into the hole the swab would pick up this extra gas when its valve is closed as the upward movement is started.

The governing conditions in the individual well would be the relative amounts of oil and gas in the formation, and if the gas has been depleted and the oil is forced into the well by water pressure behind it the increase in gas might be only nominal.

In some cases the swab is not run to the bottom of the hole, but in any event it does serve to reduce the weight of the fluid column above the producing horizon and any such reduction in pressure upon the sand will permit the gas to escape more freely.

MORE ABOUT JUNK IN WELL

In your reply in the November 28 issue to my question regarding how to get some junk out of my gas well you asked for more information. There is an 8-inch drive pipe to the limestone, about 150 feet, and 6-inch casing about 450 feet. There is 2-inch tubing the full depth of the well, 1,200 feet.

There is cement between the casing and the tubing to shut off water from entering the well. This does no harm to the well, but it prevents pulling out the tubing so that we can have a chance to fish out the junk that has been lost in the hole.

The well has to be bailed out about once a year. There is no water in it, but it gets 8 to 10 feet of heavy black dirt in it which keeps the gas from coming out. After the well has been bailed it produces enough gas to supply four or five families and a good flow. There is no gas coming out now. The last time I got a man to bail out the well he lost his bailer and about 300 feet of quarter-inch cable. I engaged another man to fish out this material. He got a hold, but tore his sucker rods in two and left about 250 feet in the well. The bailer is a 1-inch one, 20 feet long. The well is around 40 years old.

The last man I employed to fish the junk out of the well went down a number of times and got a few feet of the cable out. The last time he went down he got within 400 feet of the top and it got tighter till the rods tore, so he gave up and said he thought the tube was rotted out at the bottom. I don't think it is or he couldn't have gone up and down the way he did until he tore his rods in two. All the junk is down at the bottom of the well.

If I should put acid in the well to eat up the junk do you think there would be a chance to bail out the well, and how much acid would it need to eat up all that junk? How long would it take? Do you think the tube is rotted at the bottom?—J. H.

You have a hard problem. In the first place you have only a 2-inch tubing to work in at the bottom of the hole and this will not permit you to use any standard type fishing tools to pick up the sucker rods or one-quarter-inch line. It seems quite possible that this junk is up in the 2-inch tubing and wedged there. It would seem as though you should be able to raise the 450 feet of 6-inch casing with its cement and the 1,200 feet of 2-inch tubing and then to unscrew the 6-inch pipe as it came above the surface and break out the cement until all of this upper pipe was out of the hole.

The 2-inch pipe then could be handled by pulling it out of the hole and in this way all the material inside it would be removed from the well. The well then could be cleaned by bailing and the 6-inch pipe rerun, with the 2-inch pipe reset as before and if necessary the cement could be run in again between the the 2-inch and 6-inch to shut off the water.

The total weight of the 6-inch pipe, cement and all the 2-inch pipe probably would be less than 30,000 pounds, not a great load as loads are estimated in this country.

If you cannot pull the 6-inch pipe and the rest of the material in the hole, you might try punching the junk now in the tubing back into the bottom of the hole, using for this purpose a small string of cable tools which would have some tendency to break up part of this junk so that a little of it could be bailed out.

If this junk could be loosened you might rig up some kind of small rope spear that could catch hold of the one-fourth inch cable and pull it and the bailer out of the hole.

You would do well to take up your problem with the nearest large oil well equipment house, for it would have a wide variety of fishing tools and might be familiar with conditions in your district, enabling it to know how best to go about to clean out your well.

It seems unlikely that the use of acid would give you real benefit for it might eat out your tubing and if this is good as you believe it is it would be better to try to pull everything out of the well and rerun it after you have removed the junk.

In some districts you could get a portable drilling machine, drill out the cement plug you have in the 6-inch casing, use a tubing ripper to cut off the 2-inch tubing and then hook on to it and pull it out of the hole after the 6-inch hole is clear of cement.

It should not cost a great deal to drill another well close to the one you now have plugged but probably you already thought of that alternative.

Your problem has been laid before several men who are experienced in fishing jobs and the suggestions offered you combine their recommendations, but it is admitted frankly that they may not remove your trouble.

The small size of the hole is what makes this problem so difficult, for no ordinary fishing tools will work satisfactorily in 2-inch tubing to get out the material you have in it, although you may find that a supply company can provide you with some special tools made for your part of the country.

WHY WAS IT CALLED THAT?

DEAD OIL

Most petroleum as produced from a well is accompanied by gas from the same formation as that in which the oil originated and even though the gas and oil be run through a separator there is usually some gas still left entrained or trapped in the oil. When this gas leaves the oil as it stands at rest in the tanks it gives the oil the appearance of being alive because gas bubbles are constantly breaking at the surface. This is known as "live oil." When an oil does not carry any entrapped or formation gas, and thus is not marked by bubbles, it is termed "dead oil."

BRITISH THERMAL UNIT

Will you please give me an explanation of the term B.t.u. and something of its application to practical problems?—H. G. R.

B.t.u. stands for British thermal unit. It is generally used in engineering work in the United States and Great Britain and represents 1/180 of the heat required to raise the temperature of 1 pound of water from 32° F. to 212° F. It was formerly defined as the quantity of heat required to raise 1 pound of water from 62° F. to 63° F., but the former definition is now generally accepted.

The United States governmental departments use the following table in their calculations to designate the accepted B.t.u. contents for various fuels:

Oil	6,000,000	B.t.u. per barrel
Coal	26,000,000	B.t.u. per short ton
Gas	1,050	B.t.u. per cubic foot
Coke	30,000,000	B.t.u. per short ton
1 Kilowatt-hour	3,514	B.t.u.

These, of course, are only general averages, and specific oils, coals and gases will vary from them in some degree.

WHAT DOES WATER SIGNIFY?

After a well is in production and it starts to run water with the oil, does that mean the end of the well, or can they cement it in to shut out the water? I am asking this about the East Earlsboro Pool and the question is prompted by an article in your issue of November 14 on page 50 which refers to a well in which we have a royalty interest.—G. C. M.

The fact that water broke into the well in the East Earlsboro Pool does not mean necessarily that this well will not produce as much oil as it is possible to get from that type of structure. It is hardly probable that the operators would try to cement off this water. In the first place it would be hard to do, and in the second place the procedure might injure such production as the well still has.

The Bartlesville, Okla., station of the United States Bureau of Mines is preparing a complete report on all pools in the Seminole area and a request from you doubtless will bring you a copy as soon as the report is ready for distribution. It is likely to contain much information that will be of interest to you. It has been found that wells in the Seminole area produce more oil than was expected, and you may be sure that a good operating company will get all the oil possible from each of its leases.

PRESERVATION OF SAMPLES

Can you suggest any simple way of preserving samples of sands encountered in drilling a wildcat well and of keeping them marked or classified so that they will serve as a record for future guidance in drilling in the same territory? I have kept samples from one well in small tin cans that came for the most part from the kitchen, but this is not very satisfactory. For one thing I find the color of the sand changes after it has been in the can a few weeks. Also I think there should be a more handy system of labeling.—T. U. N.

It is quite essential that samples of cuttings from wells be collected and filed in such a way as to be available for future reference and several methods are followed by geologists.

Some dry the cuttings and put them in small paper bags. These bags are marked on the outside so that they can be placed in filing cabinets in such a way as to be in order with relation to depth. The labels show clearly so that the individual sample can be quickly selected from the group.

Another way is to prepare a well log and use one-half of the strip of paper for space for pasting the dried cutting. A special kind of glue is used for this purpose and when this type of log is completed it contains on one strip of paper both the geological and the drilling records along with the actual samples of cuttings at the different depths.

Still another method is to use a wide-mouthed bottle for the samples and then file these bottles in shallow drawers, each drawer being labeled to show the well and its location, and the containers also being labeled to indicate definitely their contents.

Water samples must be kept in glass bottles, but it has been found that it is not necessary to retain the actual samples long if the analysis is made properly, for if reduced to the standard oil field water formula of analysis, comparison always can be made from the written record and in this way all field waters from a given area can be correlated.

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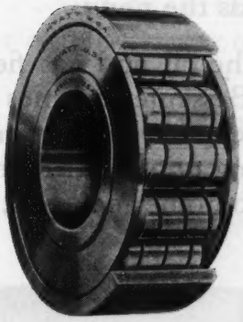

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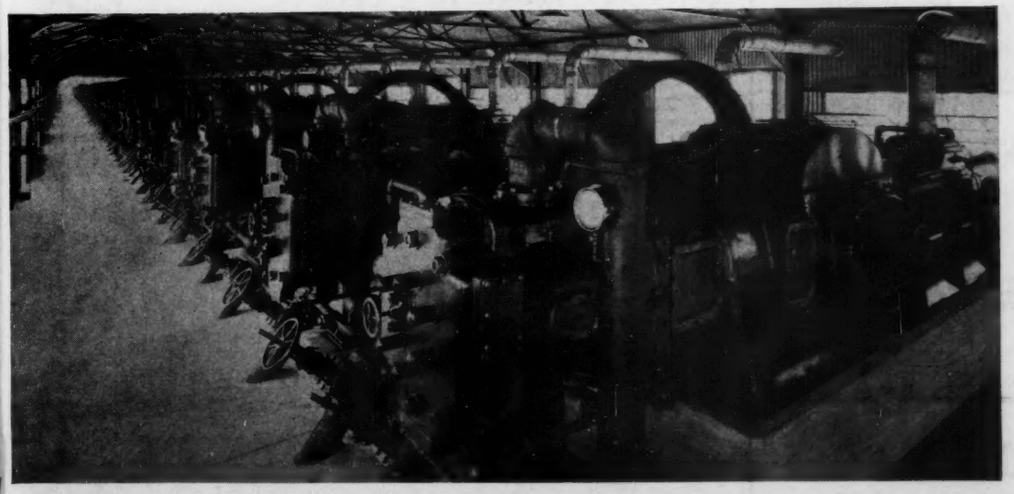

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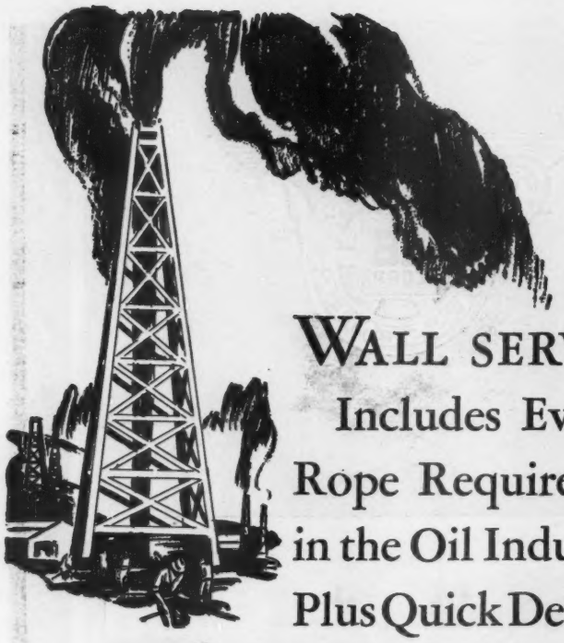

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(Continued from Page 51)

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H. J. Bussas' No. 7 Herndon, 1,200 ft. N, 600 ft. W, SE cor. NE, Sec. 15-21-15 ..... Began drlg. Dec. 12; cmtd. 10 in. 40 ft.; 6 in. 1,482 ft.; W.O.S.R. T.D. 1,695 ft.

Bayou State Oil Corp.'s No. 28 Jolly, 500 ft. N, 150 ft. W, SE cor. NE, Sec. 22-22-15 ..... W.O.S.R. 1,904 ft.

Bayou State Oil Corp.'s No. 29 Jolly, 425 ft. W, 775 ft. N, SE cor. NE ..... Began drlg. Dec. 13; cmtd. 6-in. 975 ft.

Bayou State Oil Corp.'s No. 18 Levee Board, 450 ft. N, 150 ft. E, SW cor. NW, Sec. 23-22-15 ..... W.O.S.R; T.D. 1,903 ft.

CADDO PARISH—DIXIE

Sam Gold's No. 3 Hunter, 660 ft. N, 660 ft. W, SE cor. SW NE, Sec. 17-19-14 ..... 200 ft. oil and S.W. in hole 2,457 ft; W.O.S.R; topped broken sand 2,415 ft.

The Texas Co's No. 3 Sentell, 366 ft. N, 340 ft. W, SE cor. Sec. 9-19-14 ..... Derrick.

Gulf Ref. Co.'s No. 6 Oden, 660 ft. S, 660 ft. W, NE cor., Sec. 18-19-14 ..... Cmtd. 6⅝-in. 2,336 ft; drilled to 2,444 ft; plugged back to 2,423 ft.

Lide et als' No. 1 Dickson heirs, 795 ft. N, 200 ft. E, SW cor., Sec. 10-19-14 ..... Began drlg. Dec. 18; cmt. 10-in. 135 ft.; drlg. 1,400 ft.

CADDO PARISH—OIL CITY

Gulf Ref. Co.'s No. 22-A Levee Board, 1,126 ft. S, 1,100 ft. E, NW cor. NE, Sec. 34-21-16 ..... Rigging up.

H. M. Matson's No. 1 U. S. Gov't (no check) ..... Derrick.

Magnolia Pet. Co.'s No. 19 Doan-Thigpen, 330 ft. N, 990 ft. W, SE cor., Sec. 6-20-15 ..... Set 5 3-16 in. liner; argn. test 1,670 ft.; old T.D. 3,051 ft.

P. T. Mize's No. 1 La. O. R. Corp., 445 ft. N, 100 ft. E, SW cor. SE, Sec. 1-20-16 ..... Derrick.

The Texas Co.'s No. 72 Levee Board, 725 ft. N, 210 ft. E, SW cor. SE, Sec. 27-21-16 ..... Rigging up.

Thompson & Fitzsimmons' No. 1 Howell, 600 ft. S, 300 ft. W, NE cor. SE, Sec. 13-22-16 ..... Drlg. shale and bldrs 1,100 ft.

CADDO PARISH—VIVIAN DISTRICT

Oilfields Expltn. Co.'s No. 15 Caldwell, 810 ft. S, 810 ft. E, NW cor., Sec. 29-22-15 ..... Location.

PINE ISLAND

Double II Oil Co's No. 13 Spell 750 ft. N, 450 ft. W, SE cor. NE Sec. 15-21-15 ..... Began drlg. Dec. 19; cmtd. 10 in. 40 ft.; drlg. 620 ft.

E. W. McGoldrick's No. 1 Dreyfuss-Lane, 515 ft. N, 300 ft. E, SW cor. NE, Sec. 15-21-15 ..... Cmtd. 10-in. 40 ft; 6-in. 1,510 ft; W.O.S.R; 1,700 ft.

Shreveport Oil Corp.'s No. 3 Hicks et al, 420 ft. S, 450 ft. W, NE cor. NW, Sec. 32-21-15 ..... S.D. Rep. rig 1,550 ft.

CLAIBORNE PARISH—HOMER

Oakes et als' No. 1 Richardson, NE SE, Sec. 19-21-17 ... S.D. 1,700 ft.

LA SALLE PARISH—URANIA

Ark. Fuel Oil Co.'s No. 5 Urania, 200 ft. S, 200 ft. E, NW cor. NE SE, Sec. 24-10-1e ..... Drlg. 3,756 ft.

Kinney, Hardtner & Randall's No. 1 Kinney, SW SW, Sec. 7-10-2e ..... S.D. 1,570 ft.

Philp et als' No. 1 Urania, SE cor. NE NE, Sec. 1-10-1e... Tested 500,000 ft. gas and sanded up; C.O; setting liner to test; T.D. 730 ft.

Randall et als' No. 3 Urania, Sec. 1-10-1e ..... S.D. 675 ft.

Trio Oil Co.'s No. 2 Urania, NE cor. SW SW NW, Sec. 19-10-1e ..... Rigging up.

MOREHOUSE PARISH

J. S. Herkness' No. 12 Bowles, 3,392 ft. E, 3,300 ft. S, NW cor., Sec. 18-20-5 ..... Drlg. 1,986 ft.

Magnolia Pet. Co.'s No. 6 U. S. Govt., 490 ft. N, 254 ft. W, SE cor., Lot 2, Sec. 33-21-5 ..... Tested estimated 4,000,000 ft. gas, 2,245 ft.; cmtd. 8 in. 2,368 ft.

Magnolia Pet. Co.'s No. 7 U. S. Govt., 250 ft. N, 45 ft. W, SW cor. Lot 2, Sec. 33-21-5 ..... Cmtd. 6 in. 2,370 ft.

Southern Carbon Co's No. 13 Tensas, 660 ft. S, 1,320 ft. W, NE cor. Sec. 4-20-4 ..... Rigging up.

Southern Carbon Co.'s No. 14 Tensas, 660 ft. N, 660 ft. E, SW cor. NW Sec. 34-21-4 ..... Rigging up.

United Carbon Co.'s No. 2 Patton, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 2-20-4 ..... Location.

United Carbon Co.'s No. 3 Patton, 660 ft. W, 660 ft. S, NE cor. SE, Sec. 2-20-4 ..... Location.

OUACHITA PARISH

Amalgamated Carbon Co.'s No. 2 Cole, 742 ft. E, 703 ft. S, NW cor., Sec. 43-19-4 ..... Began drlg. Nov. 27; cmtd. 12-in. 185 ft; 8-in. 890 ft; drlg. 2,116 ft.

Chauvin Gas Co.'s No. 3 Slagle Johnson, 2,539 ft. S, 55 ft. E, NW cor., Sec. 47-18-4 ..... Began Dec. 18; cmtd. 12 in. 191 ft., 8 in. 829 ft.

Chauvin Gas Co.'s No. 4 Slagle Johnson, 4,505 ft. S, 257 ft. E, NW cor., Sec. 47-18-4 ..... Location.

Hope Prod. Co.'s No. 1 Fairbanks, 660 ft. N, 624 ft. E, SW cor. SE, Sec. 25-20-4 ..... Cutting out liner; T.D. 2,198 ft.

Hope Prod. Co.'s No. 2 Fairbanks, 1,876 ft. E, 628 ft. N, SW cor. SE, Sec. 25-20-4 ..... Location.

Hope Prod. Co.'s No. 3 Fairbanks, 1,876 ft. E, 628 ft. S, NW cor. NE, Sec. 36-20-4 ..... Location.

G. E. Jordan's No. 1 Anding, NW NE, Sec. 18-18-5..... Plugging back to 2,234 ft; T.D. 2,480 ft.

La. Gas & Fuel Co.'s No. 1 Beard, Sec. 46-18-4 ..... Derrick.

Magnolia Pet. Co.'s No. 2 fee 401, 660 ft. S, 660 ft. E, NW cor., Sec. 2-18-3 ..... Derrick.

Magnolia Pet. Co.'s No. 4 U. S., Sec. 20-19-5; reported completed July 31, in error ..... Tested 1,000,000 ft. gas at 515 lbs. rock pressure; set liner 2,528 ft; bailed dry; plugged back to 2,200 ft; estimated 500,000 ft. gas; W.O; waiting orders 2,528 ft.

Michlouzanna O. & G. Dev. Co.'s No. 1 Osterlind, 6,877 ft. S, 819 ft. W, NW cor. irregular Sec. 42-18-4 .... Cmtd. 6 in. 2,180 ft.

Palmer Corp.'s No. 1 Cagle, 1,964 ft. S, 476 ft. E, NW cor., Sec. 7-18-5 ..... Fishing 4½-in. liner 2,175 ft; T. D. 2,463 ft.

Sho-Van Gas Products Co.'s No. 3 W. Va., 1,980 ft. S and W, NE cor., Sec. 8-18-4 ..... Rigging up.

Sho-Van Gas Products Co.'s No. 4 W. Va., 1,078 ft. N, 294 ft. W, NE cor., Sec. 49, in Sec. 7 ..... Location.

Sho-Van Gas Products Co.'s No. 5 W. Va., 2,046 ft. S, 1,790 ft W, NE cor. SE, Sec. 6-18-4 ..... Cmtd. 6-in. 2,154 ft.

Southern Carbon Co.'s No. 14 Fairbanks, Sec. 43-20-4.... Cmtd. 8 in. 804 ft.

Southern Carbon Co.'s No. 4 Phillips, 660 ft. S, 660 ft. E, NW cor., Sec. 8-19-4 ..... Cmtd. 6 in. 2,187 ft.

Union Gas Products Co.'s No. 1 Hare, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 22-19-5 ..... Cmtd. 8 in. 888 ft.

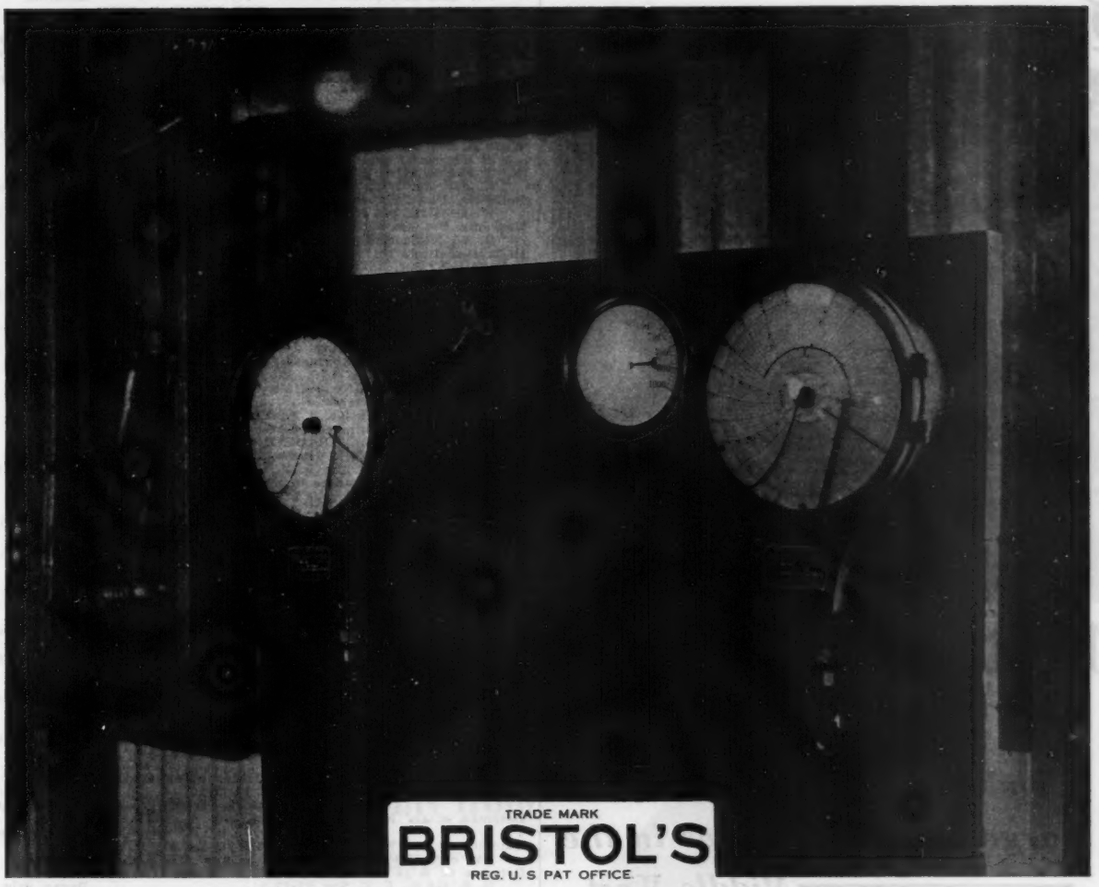
United Oil & Nat. Gas Products Co. of La.'s No. 5 Guthrie, 6,896 ft. N, 6,022 ft. W, cor. Secs. 49, 26, and 25, Sec. 49-20-5 ..... Derrick.

United Carbon Co's No. 2 Puckett, 660 ft. N, 660 ft. E, SW cor. SW Sec. 15-19-5 ..... Began drlg. Dec. 18; cmtd. 12 in. 187 ft.

Palmer Corp's No. 1-A Earle, Sec. 3-16-5 ..... Cmtd. 15½ in. 252 ft.; drlg. 640 ft.

United Oil & Nat. Gas Products Co. of La.'s No. 2 Cole, 660 ft. S, 594 ft. E, C, Sec. 26-20-4 ..... Derrick.

United Carbon Co.'s No. 5 Spade, 660 ft. N, 660 ft. W, SE cor. NE, Sec. 35-19-3 ..... Rigging up.



Recording Instrument Charts Provide An Exact, Detailed Check On Operation

AS shown in the above illustration for example, Bristol's Recording Pressure Gauges provide continuous chart records of pressure conditions in air lift station at large oil well in Crane County, Texas.

The instrument charts show almost at a glance what pressures have been maintained for hours past; what the pressure is at present, and the trend of the record line clearly indicates future conditions.

Just one example of the greatly diversified use of Bristol's Recording Instruments in the Oil and Gas Industry. Almost every conceivable operation which depends on the maintenance of certain schedules of pressure, temperature, mechanical motion, flow, etc., can either be more accurately directed from the recording instrument chart, or automatically controlled by some adaptation of Bristol's Control Equipment.

Moisture-Proof Bristol's Recording Pressure Gauge. Can be furnished for installation at exposed locations outdoors such as stills, pipe lines, etc.; or in the plant where subjection to moisture, dust or fumes is unavoidable.

And what is especially important — *the simple design and rugged construction of all types of Bristol's Intruments eliminates the necessity for frequent repairs and readjustments.* With ordinary care Bristol's Instruments will give trouble-free operation, and continue accurate, for years.

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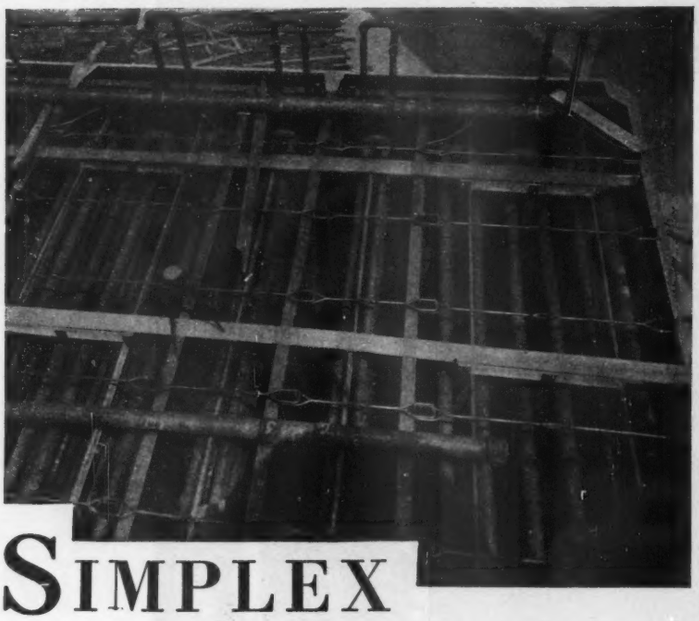

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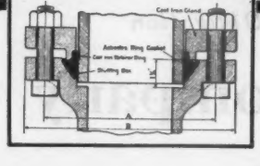


OGJ-130

United Carbon Co.'s No. 6 Spade, 1,180 ft. S, 140 ft. E, NW cor., Sec. 27-19-4 ..... Location.

RED RIVER PARISH

Root Refineries, Inc.'s No. 1 Home State & Savings Bank, 330 ft. N, 330 ft. W, C, Sec. 8-13-10 ..... Oil show 2,570 ft; drill stem test; S.W; cored sand showing gas 2,598 ft.; S.D. 2,667 ft.

Triple Oil Co.'s No. 1 W. M. Pollock, Sec. 33-13-11..... Cmtd. 6⅝-in. 2,456 ft; W.O.S.R.; 2,470 ft.

RICHLAND PARISH

Ark.-La. P. L. Co.'s No. 1 A. E. Purvis, 762 ft. N, 1,180 ft. W, SE cor., Sec. 34-17-6 ..... Cem. 15½-in. 252 ft.; drlg. 640 ft.

W. C. Feazell's No. 1 R. B. Simon, 2,406 ft. W, 2,020 ft. S, NE cor., Sec. 11-16-6 ..... Rig up.

W. C. Feazell's No. 1 E. L. Wilson, 647 ft. N, 241 ft. E, SW cor. NW, Sec. 31-16-6 ..... Drlg. gumbo 2,047 ft.

Industrial Gas Co.'s No. 1 Boughton, N 85 deg., 10 min. W, 4,458 ft., 865 ft. S, NE cor., Sec. 1-16-6 ..... Shut down 2,305 ft.

Magnolia Pet. Co.'s No. 4 C. M. Noble, 400 ft. S, 660 ft. W, NE cor. SE NE, Sec. 35-16-5 ..... Location.

M. L. Meredith's No. 1 Holdness, 1,980 ft. S, 990 ft. W, NE cor., Sec. 15-16-6 ..... Shut down 890 ft.

Northern La. Nat. Gas Co.'s No. 5 Boykin, 330 ft. N, 157 ft. W, SE cor., Sec. 20-17-6 ..... Cmtd. 9 in. 920 ft.

Palmer Corp.'s No. 1-A Earle, Sec. 2-16-5..... Cmtd. 6-in. 2,281 ft.

Palmer Corp.'s No. 1 Eubanks, 1,100 ft. N, 350 ft. E, SW cor. SE NW, Sec. 26-17-6 ..... Stuck. D.S. 2,420 ft.; bridged to 2,171 ft.; S.D. old T.D. 3,118 ft.

Palmer Corp.'s No. 5 Rhymes, 1,386 ft. N, 599 ft. E, SW cor., Sec. 34-17-6 ..... Cmtd. 6 in. 2,300 ft.

Southern Carbon Co.'s No. 1 Hale, 660 ft. N, 760 ft. W, SE cor. Sec. 16-16-6 ..... Derrick.

Southern Carbon Co.'s No. 1 S. R. Humble, 600 ft. N, 600 ft. W, SE cor., Sec. 26-16-6 ..... Cmtd. 6-in. 2,280 ft.

SABINE PARISH—PLEASANT HILL

Ark. Fuel Oil Co.'s No. 3 Horne, 560 ft. N, 195 ft. E, C, Sec. 33-19-12 ..... Drlg. 3,007 ft.

Hatcher et als' No. 1 Moore heirs, 300 ft. N, 300 ft. E, C, Sec. 32-10-12 ..... Derrick.

Magnolia Pet. Co.'s No. 5 E. E. Hall, 350 ft. N, 312 ft. E, SW cor. NW SW, Sec. 33-10-12 ..... Drlg. lime 3,150 ft.

Reid Clark et als' No. 2 Moore, 1,600 ft. N, 330 ft. W, SE cor., Sec. 33-10-12 ..... W.O.S.R; 3,236 ft.

UNION PARISH

Bahan & Bahan's No. 3 School, 1,120 ft. N, 650 ft. W, SE cor., Sec. 10-20-3 ..... Began drlg. Dec. 10; cmtd. 13⅜-in. 141 ft; 8-in. 771 ft.

Lyons Gas Co.'s No. 1 A. B. Edwards, 722 ft. W, 831 ft. S, NE cor. NW, Sec. 11-20-3 ..... Setting 6-in. 2,116 ft.

United Carbon Co.'s No. 2 Reid, 1,980 ft. E, 720 ft. S, NW cor. SW, Sec. 12-20-3 ..... Drlg. 1,930 ft.

WEBSTER PARISH—COTTON VALLEY

Magnolia Pet. Co.'s No. 1 McCook & Hibbler, C SW SW, Sec. 22-21-10 ..... Drlg. out tstg. tool rubber; T.D. 2,675 ft.

Ohio Oil Co.'s No. 46 Bodcaw, 660 ft. N, 660 ft. E, SW cor. SW NW, Sec. 28-21-10 ..... Drlg. lime and shale, 3,500 ft.

Standard Oil Co.'s No. 1-E Bodcaw, 660 ft. N, 660 ft. E, SW cor. SE, Sec. 28-21-10 ..... Drlg. shale 3,905 ft.

Standard Oil Co.'s No. 1 Thos. Crichton et al, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 22-21-10 ..... Drlg. sand and shale 4,689 ft.

WEBSTER PARISH—SAREPTA AND SHONGALOO

Bateman et als' No. 1 J. E. Womble, Sec. 1-22-11 ..... Tested S.W; S.O. 5-ft. sand 2,712 ft; arranging to plug back.

Bateman et als' No. 2 Womble, 2,840 ft. S, 1,120 ft. E, NW cor., Sec. 1-22-11 ..... Location.

Donohoe O. & G. Co.'s No. 1-B W. B. Roseberry, 250 ft. S, 250 ft. E, C, Sec. 19-23-9 ..... Began drlg. Nov. 25; S.D. 104 ft.

Pat Hudson's No. 2 S. Gardner, 330 ft. N, 300 ft. E, C, Sec. 1-22-11 ..... Drilling.

Pat Hudson's No. 1 B. L. Slack, 330 ft. W, 330 ft. N, SE cor. SW, Sec. 36-23-11 ..... Rigging up.

F. E. Estes' No. 2 Pardee, 1,270 ft. W, 50 ft. S, NE cor. NW, Sec. 3-22-11 ..... 6-in. parted; set 5 3-16-in. 2,648 ft; 2-ft. sand; T.D. 2,656 ft.

Magnolia Pet. Co.'s No. 1 J. P. Baker, 1,120 ft. S, 225 ft. E, NW cor. SW, Sec. 35-22-11 ..... O.W.D.D. Drlg. shale 2,723 ft.

Magnolia Pet. Co.'s No. 1 C. O. Bailey, 100 ft. N, 660 ft. E, SW cor. NW NE, Sec. 29-23-9 ..... Pumping S.W. 2,758 ft.

Magnolia Pet. Co.'s No. 2 Denman, 100 ft. N, 160 ft. W, SE cor. NE NW, Sec. 1-22-11 ..... Location.

Sarepta Oil Co.'s No. 1 L. S. Gardner, 300 ft. S, 300 ft. W, C, Sec. 1-22-11 ..... Tested S.W. and show oil; W.O. 2,719 ft.

ARKANSAS

JOHNSON COUNTY—CLARKSVILLE

Ark.-La. P. L. Co.'s No. 1 Patterson, 1,020 ft. S, 2,570 ft. E, NW cor., Sec. 14-10-24 ..... Drlg. 880 ft.

NEVADA COUNTY

Roy Davis et als' No. 1 Chas. Henry, 1,120 ft. N, 1,120 ft. W, SE cor., Sec. 10-12-20 ..... Derrick.

C. F. Steele's No. 1 E. W. Groves, Sec. 21-14-20..... Shut down.

OUACHITA COUNTY—SMACKOVER

L. H. Hamilton's No. 1 Arnold & Doyle, SE SE, Sec. 23-15-16 ..... Waiting on power, to pump; T.D. 2,010 ft.

Marine Oil Co.'s No. 7-A Hayes, Sec. 4-16-15 ..... W.O.S.R; 450 ft. oil; 20-ft. sand; T.D. 2,362 ft.

Simms Oil Co.'s No. 5 Johnson, 301 ft. N, 250 ft. W, SE cor. NE SE, Sec. 34-15-15 ..... W.O.S.R. 350 ft. in oil; 30 ft. br. sand; T.D. 1,987 ft.

Southern Prod. Co.'s No. 2-A Watts, NW cor. SW SE, Sec. 27-15-15 ..... Drlg. plg. 2,056 ft.; S.D.

Standard Oil Co.'s No. 10 Powell, 200 ft. S, 160 ft. W, NE cor. NW, Sec. 34-15-15 ..... Began drlg. Dec. 13; cmtd. 10-in. 85 ft.

J. D. Wingfield's No. 1 Martin, SW cor., Sec. 26-15-15 .. Set 6⅝-in. 2,085 ft; tested little oil and S.W; W.O; T.D. 2,115 ft.

OUACHITA COUNTY—STEPHENS

La. Oil Ref. Corp.'s No. 1 Green, 330 ft. S, 330 ft. E, NW cor., Sec. 22-15-19 ..... Cmtd. back to 2,240 ft; prod. 500 bbls. S.W and some oil; T.D. 2,494 ft.

Magnolia Pet. Co's No. 1 Grayson, center Lot 30, NE SE Sec. 21-15-19..... Location.

UNION COUNTY—CHAMPAGNOLLE

Magnolia Pet. Co.'s No. 1 Schmidt, 300 ft. N, 300 ft. W, SE cor. NW SW, Sec. 5-17-14 ..... Plugged back to 2,713 ft; T.D. 3,226 ft; tested S.W; recmtng. at 2,718 ft; T.D. 3,226 ft.

Marine Oil Co.'s No. 3-A Thompson, Sec. 16-18-13 ..... Coring 3,325 ft.

UNION COUNTY—EL DORADO

H. L. Hunt's No. 6 Pratt, 150 ft. N, 330 ft. E, SW cor. NE NE, Sec. 7-18-15 ..... Cmtd. 8¼ in. 2,150 ft.; T.D. 2,167 ft.

Rice et als' No. 1 W. Raity, 150 ft. S, 150 ft. E, NW cor. SW, Sec. 7-17-15 ..... Spudded July 18; cmtd. 10-in. at 92 ft.

Weisinger et als' No. 1 Lacy, 181 ft. S, 557 ft. W, NE cor. NW, Sec. 6-18-15 ..... Derrick.

Wilson & Chapman's No. 1 Thompson, 150 ft. N, 330 ft. W, SE cor. NW NW, Sec. 4-17-15 ..... D.S. test 2,137-50 ft.; S.W.; washing to bottom; T.D. 2,154 ft.

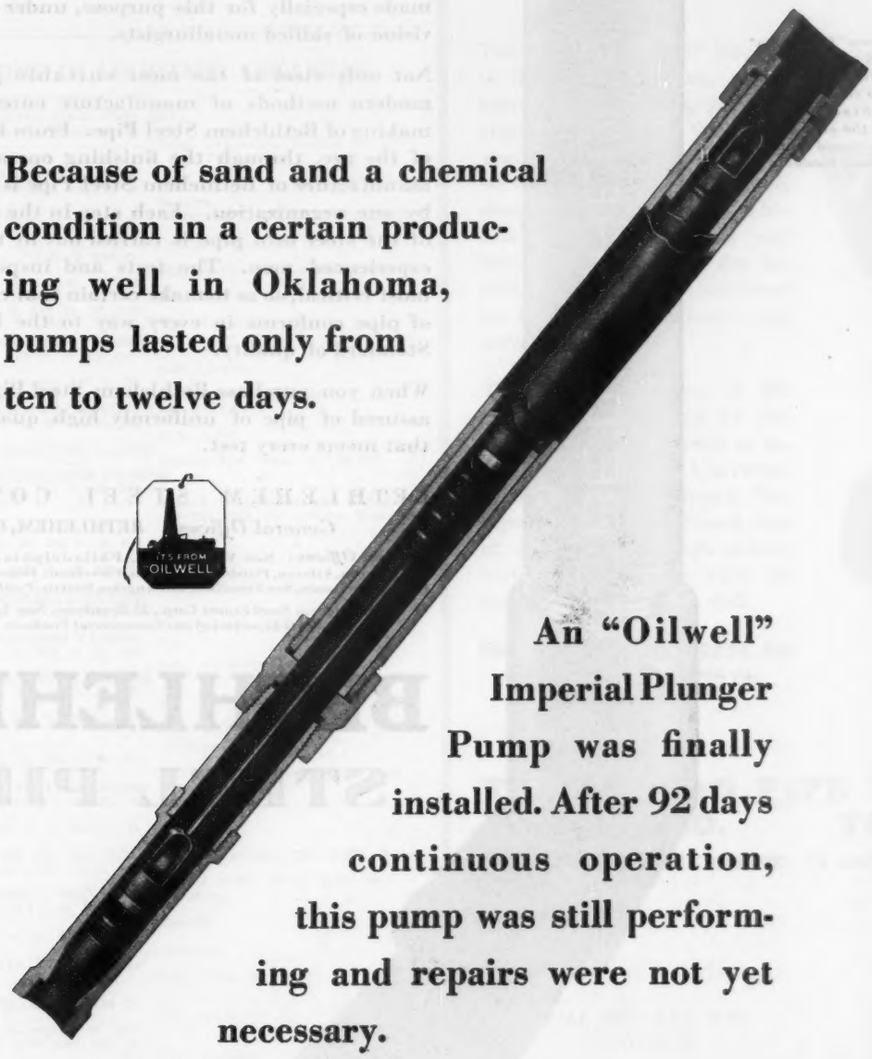
UNION COUNTY—SMACKOVER

Ark. Fuel Co.'s No. 5 Alphin, Sec. 11-16-16 ..... O.W.D.D; perforated csg. 1,960-70 ft; swbd. dry; filled up 40 ft. oil in hour; W.O.

Lion Oil Ref. Co.'s No. 1 James, CWL, Lot 2, NW, Sec. 6-16-15 ..... T.A. 2,018 feet.

Root Refineries, Inc.'s No. 8 Calloway, 510 ft. S, 150 ft.

92 days continuous operation with an "Oilwell" Imperial Plunger Pump where others lasted only 10 to 12 days



Because of sand and a chemical condition in a certain producing well in Oklahoma, pumps lasted only from ten to twelve days.

An "Oilwell" Imperial Plunger Pump was finally installed. After 92 days continuous operation, this pump was still performing and repairs were not yet necessary.

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Bethlehem maintains at Los Angeles, California, and at Houston, Texas, well assorted stocks of line pipe, ready for immediate shipment. Both threaded and coupled and plain-end pipe are included in these stocks.

W, NE cor., Sec. 4-16-15 ..... Cmtd. 4½ in. 2,243 ft.; T.D. 2,287 ft.

Skelly Oil Co.'s No. 8-A Alphin, 1,320 ft. S, C, Sec. 24-16-16 ..... W.O.S.R. 2,116 ft.

EAST TEXAS

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 9 Werner, 1,750 ft. S, 1,052 ft. W, NE cor. E. F. Mitcheson Sur. ..... Began drlg. Dec. 14; cmtd. 10 in. 40 ft.; tested dry 1,020 ft.; argn. to deepen.

Ark.-La. P. L. Co.'s No. 11 Werner, 1,850 ft. S, 1,052 ft. W, NE cor. E. F. Mitcheson Sur. ..... Location.

S. H. Gardner's No. 5 Brumble, 5,966 ft. E, 4,132 ft. S, NW cor. B. C. Jordan Sur. ..... Cmtd. 6 in. 2,225 ft. (C. D.)

S. H. Gardner's No. 4 Rocquemore, 5,176 ft. E, 4,432 ft. S, NW cor. B. C. Jordan Sur. ..... Rigging up.

Magnolia Pet. Co.'s No. 1 D. W. Scott, 640 ft. N, 660 ft. E, SW cor. Scott tract in S. Lawless Sur. ..... Drlg. 3,289 ft.

Magnolia Pet. Co.'s No. 5 G. C. Tiller, 1,114 ft. W, 303 ft. N, SE cor. Jane Thorpe Sur. ..... D.S. test 3,186 ft.; 5,000,000 ft. gas; cmtd. 5¾ in. 3,140 ft.; T.D. 3,186 ft.

Magnolia Pet. Co.'s No. 6 G. C. Tiller, 393 ft. S, 1,990 ft. E, NW cor. Jane Thorpe Sur. ..... Rigging up. O.W.D.D; drlg. 2,785 ft.

Nat. Gas Prod. Co.'s No. 8 Roquemore, B. C. Jordan Sur...

Nat. Gas Prod. Co.'s No. 10 Roquemore, B. C. Jordan Sur. ..... Began drlg. Oct. 20; cmtd. 10-in. 42 ft; drlg. 1,750 ft.

Nat. Gas Prod. Co.'s No. 11 Roquemore, B. C. Jordan Sur. ..... Running sand tester 2,277 ft.

Nemours Corp.'s No. 4 Brumble, 200 ft. N, 200 ft. W, SE cor. E. F. Mitcheson Survey..... Location.

D. Thompson's No. 4 Tiller, Jas. Story Sur. ..... Location.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 51)

Triangle Drlg Co.'s No. 1 Kilpatrick, 660 ft. S, 660 ft. E, NW cor. SW NE Sec. 7-19-5 ..... Drlg. anhydrite, topped at 4,043 ft. T.D. 4,092 ft.

DE SOTO PARISH

Benedum & Trees Oil Co.'s No. 1 Johnson, 300 ft. S, 300 ft. W, NE cor., Sec. 7-11-13 ..... Derrick.

Benson Oil Co.'s No. 1 Harris, Sec. 6-10-13 ..... Cemented 7 in. 3,061 ft. 9 ft. sand.

Benson Oil Co.'s No. 1 Hill, 1,845 ft. S, 1,200 ft. W, NE cor. Sec. 4-10-13 ..... Coring sand 3,104 ft.

Magnolia Pet. Co.'s No. 1 Anna Mason, 990 ft. S, 990 ft. E, NW cor. SW Sec. 27-12-11 ..... Drlg. shale and lime 3,139 ft.

R. O. Roy's No. 1-B Farmer, 660 ft. S, 660 ft. E, NE SW, Sec. 5-13-13 ..... Derrick.

R. O. Roy's No. 1-E Farmer, 660 ft. S, 660 ft. W, NE cor. NW, Sec. 5-13-13 ..... S.D. 725 ft.

FRANKLIN PARISH

Davis et als' No. 1 Moore, 600 ft. W, 200 ft. S, NE cor. Sec. 12-11-6 ..... S.D. 1,430 ft.

Franklin Oil & Gas Co.'s No. 1 T. J. O'Brien, 300 ft. N, 300 ft. E, SW cor. NW Sec. 17-15-9 ..... Cmtd. 15½-in. 208 ft.

LA SALLE PARISH—WHITE SULPHUR DISTRICT

Tunica Pet. Co.'s No. 52 L. & A., 660 ft. N, 660 ft. W, SE cor., Sec. 17-7-2e ..... Drlg. 1,600 ft.

MOREHOUSE PARISH

J. P. White's No. 1 Chess-Wymond, Sec. 32-19-6 ..... Tested S.W. 3,025 ft.; W.O.

NATCHITOCHES PARISH

S. D. McDaniel's No. 2 Clark & Morse, 800 ft. E, 350 ft. N, C, Sec. 23-5-6 ..... Tested 1,000,000 ft. gas and S.W. 8 ft.; S.D. for orders; T.D. 2,536 ft.

Nichols & Wilder's No. 1 Clark, 150 ft. W, 250 ft. N, SE cor. Sec. 10-10-8 ..... S.D. 2,110 ft.

Robeline O. & G. Co.'s No. 1 Winn, 558 ft. N, 348 ft. E, SW cor. SE, Sec. 7-8-9 ..... Coring sand 867 ft.

OUACHITA PARISH

J. L. Bullock, trustee's No. 1 West Va. Lbr. Co. N½ NE, Sec. 25-18-5 ..... S.D. red beds 2,598 ft.

RAPIDES PARISH

Ayers Bros.' No. 1 Wickliff, 2,790 ft. N, 150 ft. E, SW cor. Sec. 9-5n-2e ..... S.D. 2,530 ft.

RED RIVER PARISH

W. D. Ball's No. 1 Krumholtz, 660 ft. S, 660 ft. S, NW cor. Sec. 32-14-10 ..... S.D. 1,515 ft.

Eylers O. & G. Co.'s No. 1 Johnson, 500 ft. N, 500 ft. W, SE cor. SW Sec. 17-12-10 ..... S.D. 2,550 ft.

LeGrande et als' No. 1 Sample, Sec. 11-14-11 ..... Rigging up.

D. H. Riddick's No. 1 Johnson, 500 ft. N, 500 ft. W, SE cor. Sec. 17-12-10 ..... S.D. 1,050 ft.; laying gas line.

RICHLAND PARISH

Richland O. & G. Co.'s No. 1 Singleterry, 1,980 ft. N, 660 ft. W, SE cor., Sec. 20-18-7 ..... S.D. 970 ft.

Austin & McDonald's No. 1 Hunt, 594 ft. N, 660 ft. E, SW cor. Section 13-17-5 ..... Derrick.

Austin & McDonald's No. 2 Millsaps, SW cor. Sec. 17-17-6. Waiting orders; T.D. 2,679 ft.

Austin & McDonald's No. 3 Millsaps, 1,980 ft. S, 660 ft. E, NW cor. Sec. 16-17-6 ..... Tested S.W.; W.O. 2,477 ft.

Austin & McDonald's No. 4 Millsaps, NW cor. Sec. 16-17-6. Location.

Austin & McDonald's No. 5 Millsaps, 2,640 ft. N, 1,320 ft. W, SE cor. Sec. 8-17-6 ..... Derrick.

W. C. Feezel's No. 1 Landrum, 620 ft. N, 4,573 ft. E, SW cor. Sec. 6-16-7 ..... Derrick.

Industrial Gas Co.'s No. 1 T. R. Hodge, 3,289 ft. E, 1,320 ft. S, C, Sec. 7-16-7 ..... S.D. 2,586 ft.

Industrial Gas Co.'s No. 1 A. T. Davidson, 1,856 ft S, 916 ft. E, NW cor. Sec. 6-16-7 ..... S.D. 2,483 ft.

Industrial Gas Co.'s No. 1-A Jack Davidson, N 1deg gree W, 1,094 ft. S, 2,501 ft. E, NW cor. Sec. 6-16-7 ..... S.D. 2,470 ft.

Industrial Gas Co.'s No. 1 Ruston Drlg. Co., 1,980 ft. S, 1,955 ft. E, NW cor. Sec. 7-16-7 ..... S.D. 2,415 ft.

Palmer Corp.'s No. 3 Miles, 723 ft. E, 660 ft. S, NW cor. NE, Sec. 12-17-6 ..... Cmtd. 6-in. 2,315 ft.

Shreveport Contractors, Inc.,s No. 1 Bule, 600 ft. E, 400 ft. N, SW cor. Sec. 17-15-7 ..... S.D.; shale and boulders 2,527 ft.

Triangle Drlg. Co. and Woodley Pet. Co.'s No. 1 G. L. Cumpton, 660 ft. S, 660 ft. W, NE cor. NW SE, Sec. 16-17-7 ..... Tested S.W.W.O. T.D. 2,310 ft.

Woodley Pet. Co.'s No. 1 Bule, 660 ft. N, 1,980 ft. E, SW cor. Sec. 32-18-7 ..... Tested S.W.W.W. T.D. 2,485 ft.

SABINE PARISH

Bridges-Clark Oil Co.'s No. 1 Gay et al, 300 ft. S, 300 ft. E, NW cor. NE NW, Sec. 3-9-12 ..... Rigging up.

R. L. Gay, trustee's No. 6 Bowman Hicks, 900 ft. N, 300 ft. W, SE cor. NW SE Sec. 14-7-14 ..... Rigging up.

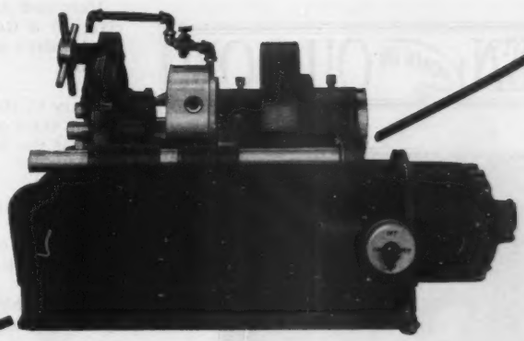
R. L. Gay, trustee's No. 2-A Bowman-Hicks Lbr. Co., 300 ft. S, 200 ft. W, NE cor. NE NW ..... Rigging up.

R. L. Gay, trustee's No. 3 Sabine Lbr. Co., 1,120 ft. N, 300 ft. E, SW cor. Sec. 13-7-14 ..... Drilling 715 ft.

G. M. LeGrand's No. 1 A. C. Haley, 1,020 ft., 3,300 ft. E, NW cor. Sec. 4-7-12 ..... Drilling shale, 2,060 ft.

Ohio Oil Co.'s No. 1 Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. NW SW, Sec. 35-8-12 ..... Rigging up.

(Continued on Page 98)

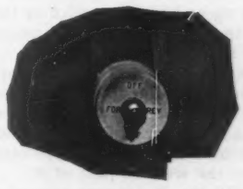


A Sensational Pipe Machine

To Thread ½" to 2" Pipe

The new "TOLEDO" No. 999 is light and compact, easily carried by two men, yet it is sturdily built and will give years and years of satisfactory service. Note the friction gear, shown in the illustration. This safety device eliminates any possibility of ruining the inside gearing, easily adjusted by tightening six small cap screws.

The entire operation of the machine is governed by the switch, no gears to shift or levers to change. The Universal motor is a variable speed. The separate die head for each size of dies makes change almost instantaneous. Dies can be easily reground when dull.



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F. O. B. TOLEDO

THE TOLEDO PIPE THREADING MACHINE CO. TOLEDO, OHIO

NEW YORK OFFICE: 72 LAFAYETTE ST.

FILL OUT AND MAIL COUPON FOR FULL INFORMATION ON THIS SENSATIONAL MACHINE

TELL ME MORE ABOUT THE "TOLEDO" NO. 999

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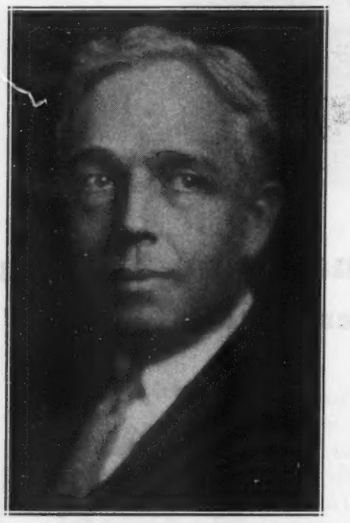


Frederick J. Wolfe

Frederick John Wolfe, recently elected vice president of Imperial Oil, Ltd., is a native of Brantford, Ontario, and before entering the oil business he served two years as principal of a school near his native town and then was employed by a Brantford manufacturing concern. In 1902 he went to Toronto where he joined the staff of the Queen City Oil Company as a statistical clerk.

Within two years Mr. Wolfe was appointed to the managemcnt of the Queen City Oil Company's branch in London, Ontario, and after two years' service there he was recalled to the company's head office in Toronto to become assistant to the lubricating manager.

When the Queen City Oil Company merged with Imperial Oil, Ltd., Mr. Wolfe was appointed assistant manager of what had become the Ontario division of Imperial Oil. Subsequently this division was divided and he was appointed to the management of the western part of it.

In 1919 Mr. Wolfe was appointed to the management of the company's divisional offices in Montreal where he supervised marketing activities throughout Quebec and in part of eastern Ontario. In 1921 he was recalled to Toronto and made general sales manager for the entire Dominion. The following year he was elected to the board of directors. The expansion of the company's marketing business in Canada is attributed largely to the enterprise and energy of Mr. Wolfe.

PERSONAL PARAGRAPHS

Bond Coleman will be working for the next few months in Nicaragua on a geological investigation.

* * *

Ken Garrison, land man for the Skelly Oil Company, Abilene, Tex., spent Christmas in Tulsa with friends and relatives.

* * *

A. G. Dana, of Casper, Wyoming, general manager of the Prairie Oil & Gas Company (Wyo.), spent the holidays in Tulsa.

* * *

Carey Butcher, formerly district geologist for the Continental Oil Company at San Angelo, Tex., is now with Cranfill and Reynolds.

* * *

N. Finestone has just returned from a year and a half stay in Rumania and Germany, installing pipe stills for Arthur G. McKee Co. in various plants.

* * *

Mr. and Mrs. George Berry have motored to Tulsa to visit relatives. Mr. Berry is in the land department of the Sinclair Oil & Gas Company, Fort Worth, Tex.

Marc and Arch Lowrance, land men for the Sinclair Oil & Gas Company, Fort Worth, Tex., spent the holidays in Thayer, Kan., at the home of their parents.

* * *

Harry C. Hanszen, formerly president of the Calcasieu Oil Company, Houston, Texas, is spending some of the holiday season on a hunt in southern Louisiana.

* * *

John M. Carson, president of the Lake Petroleum Company, of Chicago, addressed the graduating class of the Goshen, Ind., high school on the subject of petroleum.

* * *

Mr. and Mrs. Will Eyssen of San Angelo, Tex., spent the holidays in Toledo, Ohio, Mr. Eyssen's home. He is an independent operator in West Texas, formerly located at Abilene.

* * *

W. F. Lewis, formerly vice chairman of the sales committee of the Union Oil Company of California, has been appointed manager of the company's operations in the Los Angeles district.

* * *

W. E. (Steve) Dunlap, a director of the Richfield Oil Company and manager of production, has been elected a director of the Universal Consolidated Oil Company with offices in Los Angeles.

* * *

George R. Duncan of the Richfield Oil Company of California has been appointed production superintendent of the company's operations in the Elk Hills Field with offices at Taft, Calif.

* * *

Dr. George Otis Smith, representing Secretary of Interior Wilbur, has arrived in California from China and is spending some time checking over developments in the Kettleman Hills Field.

* * *

M. C. Madsen and Glenn L. Shepherd, engineers with the Empire Company at Bartlesville, Okla., and F. H. Simpson of the Tulsa office have returned from a trip to Lawrenceville, Ill.

* * *

D. W. Moffitt, vice president of the Mid-Continent Petroleum Corporation and Mrs. Moffitt are now at the Robert Clay Hotel, Miami, Florida. They expect to remain in Miami during the winter months.

* * *

M. M. Kornfeld, micro-paleontologist for the past three years for Shell Petroleum Corporation at Dallas and Houston, Texas, is taking graduate studies in geology at Leland Stanford University.

* * *

Frank Morgan, Jr., chief geologist of the Rio Grande Oil Company, was recently elected to the business committee of the Pacific Coast section of the American Association of Petroleum Geologists.

* * *

Mr. and Mrs. Paul Martin, and little daughter have made an automobile trip to Coffeyville, Kans., to spend several days with relatives. Mr. Martin is chief scout for the Pure Oil Company at Fort Worth, Tex.

* * *

F. Van Acker, formerly chief engineer for the Engineering, Research & Equipment Company at Dallas, Texas, is now chief engineer for Petroleum Engineering, Inc., with offices in the Philtower Building, Tulsa.

* * *

G. S. Engle recently completed a quarter of a century's service with the Asiatic Petroleum Company, Ltd. The staff presented to him an old silver Georgian cup, and to Mrs. Engle a brooch set with diamonds and onyx.

* * *

Harry Sample, land man for the Vacuum Oil Company, formerly located at Eastland, Tex., has been transferred to the East Central Texas district and will have offices at Tyler. His family will move to Tyler as soon as a home can be located.

* * *

Alf G. Heggem, president of the Oil Well Improvements Company of Tulsa, will spend the next six or eight weeks in California in the interests of his company. Mr. Heggem is making the trip by automobile and will visit the producing fields in Louisiana, Texas, and New Mexico en route to California. Mr. Heggem is vice president of the International Petroleum Exposition and former president of the Tulsa Chamber of Commerce and an active figure in the scientific and engineering branches of the petroleum industry.

R. C. Brand, sales manager for The Union Chain and Manufacturing Company, has just completed a month's trip through the Mid-Continent oil fields and returned home for the Christmas holidays.

* * *

Ralph R. Risser, former division manager of the Marland Refining Company, with offices in Minneapolis, Minn., is being transferred the first of the year to the Chicago office of the Conoco Oil Company, a subsidiary of the Continental Oil Company of Delaware.

* * *

W. H. Cottrell, assistant to the vice president of the Richfield Oil Company of California, and Dudley Steele, manager of the aviation division of the company, flew from San Francisco to Fresno recently where the company has taken a service station site at the municipal airport.

* * *

Edward A. Causino, manager of the fuel oil department and vice president of the Acme Petroleum Company, of Chicago, is confined to his home with a broken ankle. He fell on an icy sidewalk and fractured the ankle bones in three places. He is not expected back at his office until the middle of January at earliest.

* * *

S. E. McCorquodale, abstract and title expert of the Gulf Refining Company, who was transferred from the Shreveport, La., offices to the Houston, Tex., headquarters several weeks ago, was in Shreveport visiting the local offices and old friends and to transfer his family to their new home in Houston.

* * *

L. O. Koen, vice president of W-K-M Company, Houston, Tex., is on a short trip to Chicago, Detroit and other cities of the Middle West, investigating sales possibilities in the industrial field for DuGas fire extinguishers. The distribution of these extinguishers was recently taken over by Mr. Koen's company.

* * *

John Darr, of Pittsburgh, Pa., general superintendent of the telegraph department of the Southern Group of Pipe Lines will retire from active service on the first of the year. Mr. Darr started as a messenger 50 years ago. The heads of the department and associates as an expression of their esteem and friendship, presented a handsome gold watch to him.

* * *

Richard H. Willis, F.C.I.S., office manager for the Royalite, Northwest and Dalhousie companies at Calgary, is retiring from the service of Imperial Oil, Ltd., owing to ill health. He will leave shortly for England. Since 1897, Mr. Willis has done work in this capacity in many countries, including Brazil, India, South Africa, Peru, New York and Colombia. He came to Calgary in 1928 from Toronto.

* * *

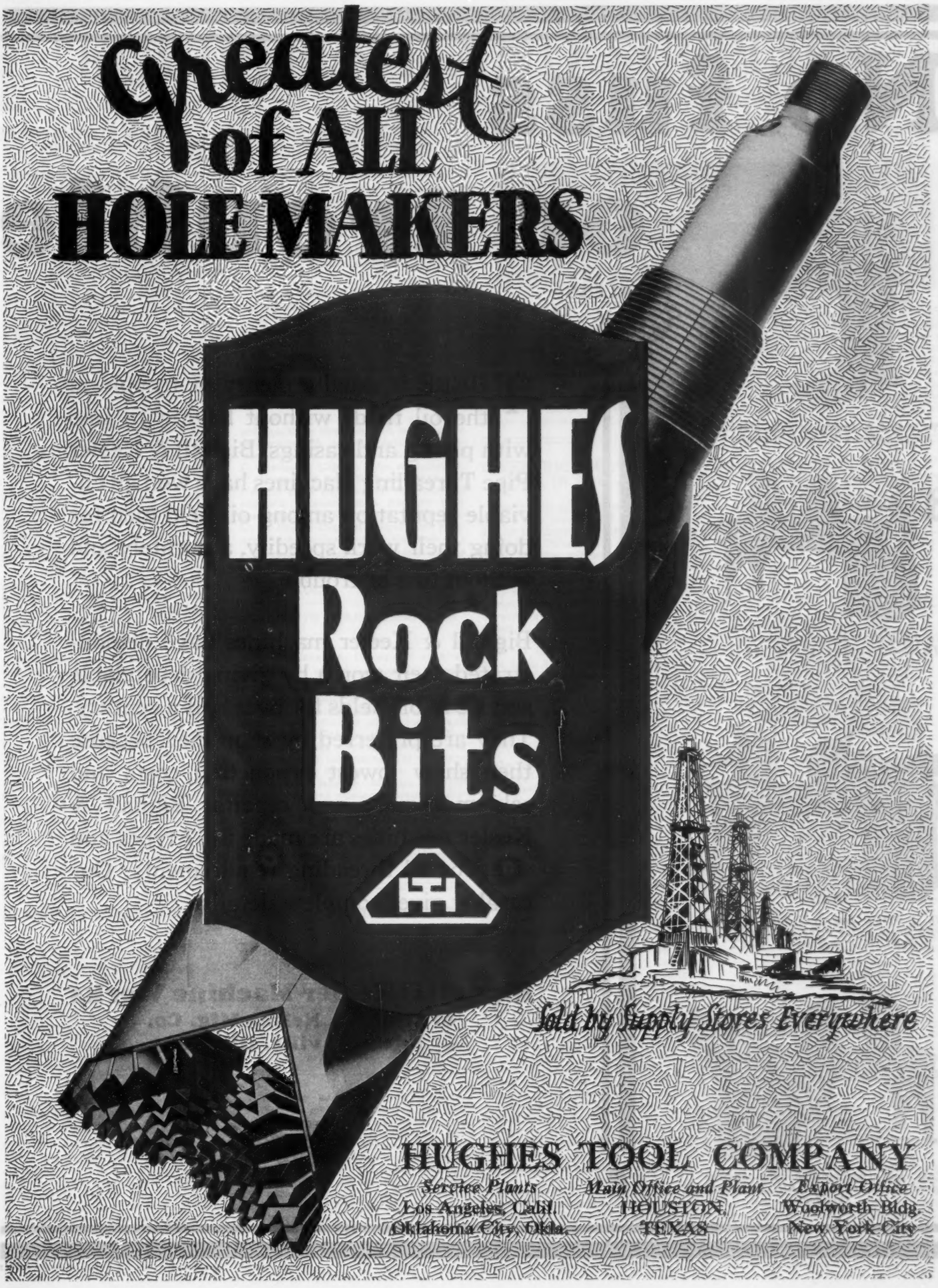
Rupert E. Ricker and Floyd Dodson, independent operators of San Angelo, Tex., who organized the Black Arrow Oil Company with Ray D. Robinson, Loren L. Hillman and Carl T. Long of Los Angeles, Calif., have sold out their interest in the company to the latter three men. Mr. Ricker has been president of the company and Mr. Dodson, vice president. Mr. Hillman becomes the new president and Mr. Long the vice president, with Mr. Robinson chairman of the board of directors.

* * *

M. E. Wilson, vice president of the Lion Oil & Refining Company, El Dorado, Ark., has been making a field trip through Louisiana and East Texas and passed through Fort Worth on his way to West Texas where his company has many interests. Jack Watt, land man for the company, stationed at Tyler, Tex., accompanied him as far as Fort Worth. Mr. Watt was formerly located at El Dorado with the company, but was transfered to Tyler when the Van Pool was opened by the Pure Oil Company.

* * *

Adrian Moore, vice president and general manager of Rycade Oil Corporation; W. C. Thomas, assistant general manager of the southwestern division of the Vacuum Oil Company; John R. Suman, director of the Humble Oil & Refining Company; F. A. Reeder of the Moody-Seagraves companies, all of Houston, and A. S. Field, Shell Petroleum Corporation, Fort Worth, were members of a two-days' hunting party as guests of the Texas Creosoting Company and the Sabine Supply Company of Orange, Texas. The hunt was on the preserve of the Orange-Cameron Land Company.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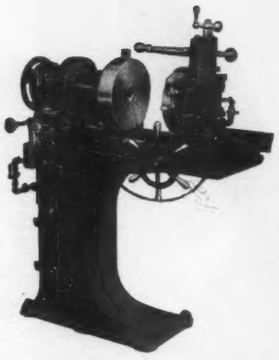
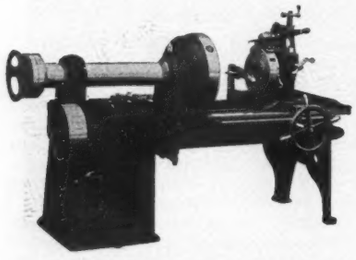
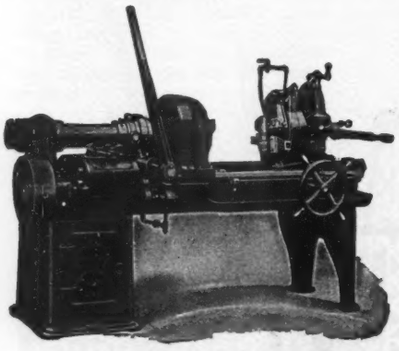


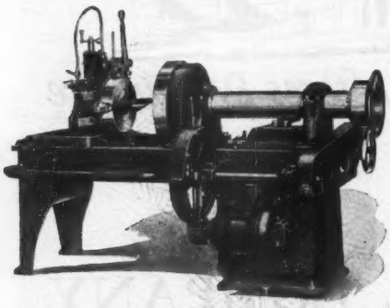
No. 2 B & K Improved Pipe Machine. Pipe capacity ¼" to 2" diameter.



No. 2 and No. 3 Peerless Improved Pipe Machine. Capacities ¼" to 2" and ¼" to 3" respectively.



No. 2 PDQC Improved Pipe Machine with single pulley drive and Landis Die Head. Pipe capacity ¼" to 2".



Rear view of machine, showing constant speed motor drive. All gears are shielded.

PEERLESS B&K DUPLEX P.D.Q.C

THERE is usually plenty of trouble in the oil fields without having to fuss with piping and casings. Bignall & Keeler Pipe Threading Machines have won an enviable reputation among oil field men for doing their work speedily, accurately and without fuss or trouble.

Bignall & Keeler machines have demonstrated their worth by giving dependable service in oil fields for over half a century. They are preferred by shop men because they show lowest production costs and seldom require any repairs. Bignall & Keeler machines are made in 17 types and sizes for all threading requirements. Our catalog gives complete details.

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PEERLESS B&K DUPLEX P.D.Q.C

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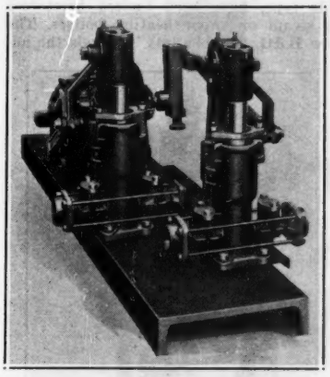
EQUIPMENT AND SUPPLIES

PUMP RESISTS ACTION OF CORROSIVE LIQUID

A newly designed Hills-McCanna chemical proportioning pump for feeding and metering highly corrosive acids is equipped with thread adjustment stroke



mechanism, making it possible to change the quantity of chemical delivered almost instantaneously and without the use of tools. Slight variations can be made without even stopping the pump or interrupting the feed of the treating agent.

The fluid end, or that portion of the pump coming in contact with the chemicals, is constructed entirely of Duriron, including the check valves, resisting the action of sulphuric acid, whether it be 66 degrees or less, weak or strong, concentrated or diluted.

For continuous treating systems (conventional or centrifuge) economical results are said to be assured. The amount of acid put through may be controlled and proportioned to the throughput of liquid to be treated. In addition to being positive in the quantities metered, the hazard of pushing sulphuric acid around is eliminated, according to the manufacturers.

The complete assembly, consisting of the motor, reduction gears and two pumping units having independent suctions and discharges, is mounted on a lead-covered base further to insure long life. These pumps are furnished in either single or dual units, in standard sizes of 1-inch, 2-inch and 3-inch.

THREE NEW PIECES OF EQUIPMENT ANNOUNCED

The Universal Pump & Tank Corp. of Cleveland, Ohio, has made announcement of three new developments in grease, oil and gasoline handling equipment. These include a "one-man" grease nozzle, a vapor control valve for gasoline storage tanks and a continuous flow oil pumping unit.

The Universal company is new, having recently taken over the equipment division of the National Steel Barrel Co., but the active men in it are widely known for having developed and marketed improvements in oil and grease dispensing equipment. Besides new items to be added gradually, a complete line of standard equipment is manufactured and sold.

Fred Charlton is president and Richard Spaeth is vice president in charge of production. A national sales organization has been established, including F. C. Justice as Chicago sales manager, D. T. Morgan of New York as eastern divisional sales manager, H. S. Evans as southern divisional sales manager with headquarters in Cincinnati, W. P. Butler as Pacific Coast divisional sales manager with headquarters in Oakland.

A modern plant with 50,000 square feet of space, together with administrative headquarters, has been established in Cleveland, Ohio.

ALLOY TO RESIST CORROSION

Hills-McCanna "No. 45," made by the Hills-McCanna Co., Chicago, is an alloy designed for use where strength is needed and where corrosion occurs. No. 45 is corrosion-resisting and is made to withstand unusual pressures and abrasions. Its coefficient of expansion and thermal conductivity make this alloy adapted for still plugs and thermo wells. It is especially recommended by the manufacturers for alum solutions, weak sulphuric acid, tanning solutions, sulphur bearing oils and similar solutions. Hills-McCanna "45" has been used in the oil refining and chemical industry in this country and abroad. Its uses include gears and bushings, acid-line fittings, pyrometer tubes, valve parts and pump parts.

TWO CARS NEEDED TO CARRY FRACTIONATING TOWER

Weighing 68 tons, almost two freight cars in length (78 feet), and 10 feet in diameter, this large fractionating tower is consigned to the Continental Oil Co.'s plant in Ponca City, Okla. The Southwestern Engineering Corp., Los Angeles, contractors for the tower, state that with the 15 cast-iron bubble pans shipped separately because of their weight, the total weight of the tower will be 145 tons.

The tower is designed to take pressure distillate from a Dubbs cracking unit and the product from the tower will be a specification motor fuel. The trays for the tower, radial-flow type, are made in four sectors which are bolted together. Manholes are provided for each tray for easy accessibility in case of repair. The tower will operate under a pressure of 30 to 60 pounds.

ECCENTRIC SLEEVE DOES WORK IN THIS OVERSHOT

The American eccentric releasing overshot, a new piece of oil field equipment put on the market by the American Iron & Machine Works Co., Oklahoma City, Okla., operates without springs, dogs, or slips, using an eccentric sleeve inside the body that makes the pickup. It can be used on any size of drill pipe by using corresponding sleeve. The guide is removable and interchangeable with the American milling shoes or wall hook.

To operate this overshot it is slipped over the tool joint or coupling snugly, then given a half turn to the right with the tongs. The sleeve engages the tool joint or coupling. To release the pipe is let down slowly, the fishing string being turned to the left with the tongs.

BUSINESS NOTES

The Twin Disc Clutch Co., of Racine, Wis., will exhibit at the 1930 road show in Atlantic City with a line of power take-off units and clutches suitable for use in road building and industrial machines.

At the annual meeting of the American Society of Mechanical Engineers in New York Charles Piez, chairman of the board, Link-Belt Co., Chicago, began his term as president of the association, the largest engineering organization in the world. Mr. Piez is widely known as engineer, manufacturer and executive.

The Prest-O-Lite Co., Inc., New York, will exhibit Prest-O-Lite truck and tractor lighting equipment, carbic floodlights, small tank appliances, oxweld cutting and welding equipment and the carbic generator at the Atlantic road show January 11 to 17.

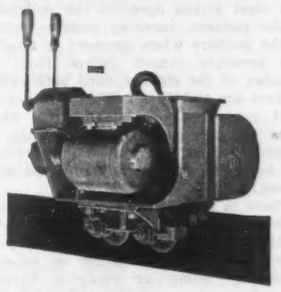
A new and larger branch office of the Gardner-Denver Co., Quincy, Ill., has been opened in Tulsa at 38 North Guthrie Street. More than 4,500 square feet is available for warehousing. J. F. Ward is manager. The Gardner-Denver Co. manufactures slush and mud pumps, drill sharpeners, drill steel forges, air compressors and rock drills.

NEW TANK GAUGE DESIGNED

A new type of tank gauge has been designed by the Vapor Recovery Systems Co., Compton, Calif. It is equipped with a gravity compensator and ball-bearing sheaves, and is said to be adaptable to all types of gas-tight roof construction by the use of proper roof connection.

FULL LINE OF ELECTRIC HOISTS PUT ON MARKET

A complete line of electric hoists in sizes ranging from one-eighth to 7½-ton capacity is announced by the hoist and crane division of Robbins & Myers, Inc.,



Springfield, Ohio. Among outstanding features which the manufacturers say these new hoists incorporate are:

A radical change in design with a resultant saving of both weight and space in all dimensions, headroom included.

A cast steel trolley adjustable to nine sizes of I-beams.

A safety constructed enclosed bottom block which retains the rope on the sheaves and shrouds all parts so as to guide itself easily into the rope flare when swinging.

Gearing of alloy steel, heat treated to rigid specifications which allow for the maximum strain of constantly reversing tooth loads at top motor speed.

Hyatt roller bearings specified by and applied with the approval of the Hyatt Roller Bearing Co. in the hoisting mechanism.

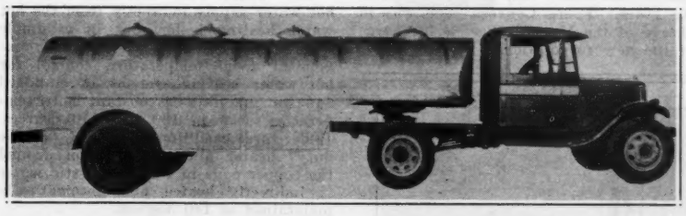
A main frame of Aremite alloy metal, produced in the Robbins & Myers' foundry by electric process, which has a tensile strength of 35,000 pounds per square inch.

An aluminum finish applied throughout which makes for attractive appearance and provides lasting protection against damage from exposure.

CHAPMAN HAS NEW WAREHOUSE

The Chapman Valve Manufacturing Co., Indian Orchard, Mass., has opened a warehouse at 2610 Bell Avenue, Houston, Tex., with a full stock of gate valves for oil, gas, steam, air and chemical lines at all pressures and temperatures. A. B. Harrison and H. B. Keir has been added to the staff of the branch, of which G. L. Griffin is manager.

STANDARD STEEL BUILDS ALL ALUMINUM TRUCK TANK



The world's first all-aluminum truck tank has been built by the Standard Steel Works of North Kansas City, Mo. This newly developed unit, a 2,400-gallon drop-frame semitrailer tank has been purchased by The Texas Company and put in operation in Texas. This application of aluminum in truck tank construction is of great importance, especially in tanks of 800 gallons and over, according to the manufacturers, who say all-aluminum construction has the following advantages:

Decreases deadweight of construction 50 per cent. Increases payload capacity at least 20 per cent. Aluminum is noncorrosive and will last indefinitely when handling products of even the most corrosive acid content. Aluminum, being a reflector of heat, reduces loss from evaporation. Should an aluminum tank become obsolete or useless owing to change of design in truck or trailers, aluminum has a ready resale for scrap at attractive prices.

Tests are reported to have indicated that aluminum is adapted for withstanding the strains and jolts of truck tank equipment.

EQUIPMENT AND SUPPLIES

HYDRAULIC FORCE USED TO CLEAN WELL SCREEN

In many cases decline in production of a well is caused by the fine screen openings becoming fouled with sand, shale or other material or by corrosion resulting from chemical action. The Hydraulic well screen cleaner, manufactured by the Hydraulic Equipment Corp., Houston, Tex., is designed to remove any obstructions interfering with the free passage of oil and gas through the screen.

The cleaner is run on a string of tubing to the top of the screen. Then it is lowered about 18 inches down into the screen. Pressure from a slush pump or hydraulic pump (if available) is applied. The pressure has a tendency to cause both rubber packers to set against the inside walls of the screen. When the packers are fully collapsed the cleaning fluid used—oil, water, hot oil or chemicals—passes into the chamber between the two packers and out through the spray holes in the chamber and straight against the screen openings to remove any obstruction on the outside of the screen.

As soon as the screen openings are cleared the pressure will decline. The cleaner is lowered about 18 inches farther into the screen at each operation until all of the screen set into the hole has been cleaned on the outside.

A steel piston operates the collapsing of the packers, insuring positive setting of the packers when pressure is applied. The pressure cannot escape from the chamber of the cleaner until both rubber packers are tightly set. This confines the fluid pressure to a small area which gives full pressure volume against the screen openings. The rubber packers used can be easily and cheaply replaced when necessary.

There is nothing on the screen cleaner which can be lost or stuck in the screen as the rubber packers automatically release as soon as pressure is relieved, either by pump or escaping through cleaned screen openings. Any desired amount of pressure can be applied to thoroughly clean the outside surface of the screen. The more pressure applied the better cleaning the screen will receive.

IMPROVED FEEDING DEVICE

The General Electric Co. announces an improved feeding device on its automatic welding head to meet advances in the art of automatic welding which call for an increased use of high welding speeds requiring heavier welding currents and larger sizes of electrode wire than formerly ordinarily used. This improvement consists of the addition of geared drive to what was formerly the idler roller in the feeding mechanism. In this way the large sizes of wire, which are stiff and hard to feed without excessive pressure on the driving rolls, are positively fed without slippage, at a regular rate and with only a moderate pressure between the driving rolls.

DEVELOPMENT IN LUBE UNITS

"A New Development in Lube Units," just issued by the Brown Instrument Co. of Philadelphia, Pa., is the title of a folder picturing the installations of the new Govers process lubricating oil vacuum still at the Lawrenceville, Ill., plant of the Indian Refining Co. As this installation represents the first time that Diphenyl vapor has been employed as a heat transfer agent in the petroleum industry, it is expected that the results will be watched closely. The folder discusses and pictures the instrument equipment used at Lawrenceville.

HARTLEYS TAKE HIGHER POSTS WITH LINK-BELT

The Link-Belt Co., Chicago, has made J. J. Hartley chief engineer of the company's Pershing road plant, Chicago. He was formerly in charge of foundry equipment sales in the western division of the Link-Belt organization. For the last 19

J. J. Hartley

years he has held various positions with the company, adding practical experience to engineering ability.

W. L. Hartley, brother of J. J., and formerly assistant in the foundry equipment sales department, has been appointed manager of this department to replace his brother.

PREPARING FOR BURNER SHOW

The demand for space at the National Oil Burner Show to be held in the Hotel Stevens, Chicago, during the seventh annual convention of the American Oil Burner Association, April 7 to 12, inclusive, indicates keen sales competition in this field during the coming year. The directors of the association will meet in the Hotel Stevens on January 14, to consider plans for the convention and to hear the report of Executive Secretary Harry F. Tapp, who is in charge of arrangements for the exposition. Fifty-seven manufacturers had engaged space up to December 12, 1929. They include leading burner manufacturers and makers of heating accessories.

The Wagner Electric Corp. has removed its Chicago sales office and service station to 1935 Indiana Avenue.

WELL CLEANED OF SAND BY FORCED CIRCULATION

The H. L. & H. Co., through Crausbay-Phelps Co., of Houston, Tex., is about to place upon the market a device designed to remove sand, shale, mud and paraffin from the well together with the oil while the working barrel is in operation. Sand and foreign matter penetrate the screen and if not removed accumulate until they reach the working barrel and prevent the seating of the valves. When the accumulation becomes packed solidly within the screen and liner it is a common practice to raise the working barrel above the screen and continue pumping. Such an accumulation sometimes obstructs the passage of oil into the working barrel, thus greatly decreasing production.

The Humason circulating sand pump is designed to handle and remove all sand, shale, mud and paraffin which come within suction range and deliver them to the surface, allowing free and unobstructed passage of the oil and eliminating loss of production and the expense of frequently washing out the well and resetting the pump.

The principle employed is that of forced circulation, the same as in rotary well drilling. Water or oil, air or gas may be forced downward into the working barrel, thence upward within the tubing with the oil, sand or foreign substances into the pit. The circulating fluid does not enter the formation and may be used repeatedly. It is propelled by a force pump at the surface and operated by power independent of the walking beam, which carries the load of sucker rods and plunger only. The two operations may be carried on simultaneously, or either one separately.

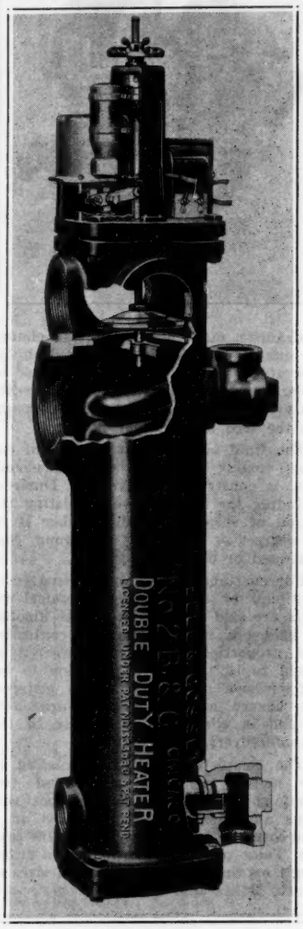
If the well is free of sand or foreign substances the working barrel only may be operated. When sand trouble develops fluid may be circulated until the accumulated sand is removed. If the well produces sand continually in large quantities the circulation may be continued indefinitely.

NEW EXPORT COMPANY FORMED

The Emsco Derrick & Equipment Co. and the Continental Supply Co. announce the formation of a company to conduct their foreign and export business. Emsco's office at 150 Broadway, New York, and Continental's office at 74 Trinity Place, New York, have been abandoned as separate offices and the business of both companies will be conducted under the new firm name, the Continental-Emsco Co., Inc., at 74 Trinity Place. F. L. Convers, who was in charge of the Emsco office, is in charge of the new corporation.

"DOUBLE DUTY" HEATER YIELDS HOT WATER TOO

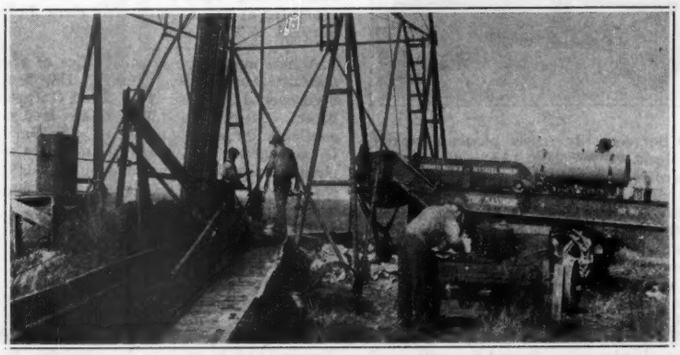
An indirect water heater adapted to oil or gas-fired hot water boilers is announced by Bell-Gossett, of Chicago. Indirect heaters, including the B.&G. outside type, have been limited heretofore to steam or vapor heating boilers. The new B.&G. "double duty" extends the advantage of this economical method to hot water boilers (except coal-fired).



The "double duty" not only derives a hot water supply indirectly from the hot water heating boiler, but in a simple way provides a new positive and economical room temperature control for hot water heating systems. A standard aquastat maintains a constant boiler temperature between 150 and 170 degrees. Under these conditions the B.&G. "double duty" heater allows circulation around the copper coils in which domestic water is indirectly heated and automatically maintained at 140 degrees.

The room thermostat under this arrangement controls a main valve to the radiator lines. This valve, operated by a vapor motor, is an integral part of the heater. Thus in maintaining a constant hot water supply, boiler water is ready on call by the room thermostat to supply immediate heat. This is shut off as soon as the room temperature is raised sufficiently, just like turning off the radiator.

One gallon of oil for 24-hour hot water service is the report to date for the average home, according to the manufacturers.



Pulling tubing on single line with the Cardwell-Keltner oil well winch mounted on a "Caterpillar" Sixty at Eldorado, Kans.

1930

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H. C. SMITH *Quality* TOOLS

The rig equipped with H. C. Smith Quality Tools is assured of maximum hole, and better cores at minimum cost.

Start right — with the complete line of H. C. Smith coring, underreaming and drilling tools—and 1930 will show marked reductions in operating costs with correspondingly higher records of accomplishment.

Complete information and performance data on any or all H. C. Smith QUALITY drilling, coring and underreaming tools will be supplied on request.

The NEW H. C. Smith Type "G" Demountable Drilling Bit: A noteworthy addition to the H. C. Smith line of *hole makers.* Drop-forged of special alloy steel of perfected design and a new method of diamond metal setting and hard surfacing. Makes hole faster and straighter. Two point roller reamers steady bit in hole, insuring straighter hole, and eliminate necessity of reaming down to get new bit on bottom. Can be run with either roller reamer body or plain body.

The Famous H. C. Smith Type "C" Coring Outfit: Takes perfect cores in any formation that a fishtail or disc bit will penetrate. Drop-forged high carbon steel throughout with renewable cutterheads which eliminate rebuilding. Cutterheads can be changed quickly and easily. All four blades cut to same gauge, keeping hole out to gauge. Serrated feature of bit blades provide easier penetration of all hard and soft formations.

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WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 91)

Ohio Oil Co.'s No. 2 Bowman-Hicks, 330 ft. N, 330 ft. W, SE cor. SE SW, Sec. 33-8-12 ..... Rigging up.
Olsen Brothers' No. 1 Keeler, SW cor. SW SE Sec. 27-8-12. S.D. 2,170 ft.
D. H. Riddick's No. 1 Scretchfield, 400 ft. E, 400 ft. N, SW cor. NW SE Sec. 18-9-12 ..... Show gas 1,710 ft. drilling 1,930 ft.
Sabine O. & G. Co.'s No. 1 Anderson, 200 ft. N, 200 ft. E SW cor. SW NW Sec. 19-18-13 ..... S. D. limy shale; T. D. 2,242 ft.
A. H. Tarver's No. 2 Long Bell, 800 ft. N, 800 ft. W, SE cor. SW Sec. 18-8-13..... O.W.D.D.; abd. dry 1,921 ft. 911-29 in. csg. 1,949 ft.
A. H. Tarver's No. 1 Sabine State Bank, 250 ft. N, 250 ft. W, center Sec. 27-8-12..... Rigging up.

UNION PARISH

Fred Stovall's No. 1 Stovall, 1,820 ft. E, 350 ft. N, SW cor. Sec. 32-23-4 ..... Rig up.

WEBSTER PARISH

F. M. Fuller's No. 1 Monzingo, 200 ft. N, 200 ft. W, SE cor. Sec. 27-18-8 ..... Began drlg. Nov. 10; cmtd. 10-in. at 62 ft.
Paul C. Warren et als' No. 1 Martin, 305 ft. N, 212 ft. E, SW cor. Sec. 20-20-9 ..... Show gas top Nacatoch; 1,759 ft. S.D.

WEST CARROLL PARISH

Palmer Corp.'s No. 1-A Marston, 1,320 ft. S, 89 deg., 35 min. W, 1,320 ft. of SE cor., Sec. 11-19-10 ..... Derrick.

ARKANSAS

ASHLEY COUNTY

Ark. Fuel Oil Co.'s No. 1 Crossett Lbr. Co., 330 ft. E, 330 ft. S, NW cor. Sec. 1-19-7 ..... S.D.; fuel 2,695 ft.

CLARK COUNTY

Wm. Henry, trustee's No. 1 Clark, Sec. 34-9-21 ..... S.D. 1,200 ft.

CLEBURN COUNTY

Cosden Oil Co.'s of Ark.'s No. 1 Donophan, 100 ft. S, 660 ft. E, NW cor. SW SE Sec. 19-9-10 ..... Cmtd. 15⅛-in. 437 ft; straightening hole to 470 ft; T.D.

COLUMBIA COUNTY

Parker and others' No. 1 Franks, 330 ft. S, 330 ft. W C Sec. 25-19-23 ..... S.D. 2,835 ft.
Williams et als' No. 1 Fullenwider, 200 ft. N, 600 ft. E, SW cor. NE SE, Sec. 12-17-22 ..... Location.

DREW COUNTY

McClintock & Goodka's No. 1 Ogles, 920 ft. W, 400 ft. S, NE cor., Sec. 35-13-5 ..... O.W.D.D; rptd. junked and abd. at 3,575 ft. Aug. 30, 1928; resumed drlg. Nov. 15, 1929; pulled 1,740 ft. drill stem; milled csg.; drlg. 1,730 ft.

FAULKNER COUNTY

Gold Creek Oil & Gas Co.'s No. 2 Stermer, SE cor. NW SE Sec. 17-4-13 ..... Began drlg. Dec. 12.

GARLAND COUNTY

Givens et als' No. 1 Garrett, 660 ft. S, 660 ft. W, C Sec. 1-3-19 ..... Drlg. 3,388 ft.

GRANT COUNTY

Jones & Watkins' No. 1 Meek, Sec. 5-4-11 ..... S.D. 1,400 ft.

LITTLE RIVER COUNTY

A. L. Buck's No. 1 Greason, NW NW, Sec. 25-12-32 .... Cored 4-ft. sand 2,034 ft; W.O.
McDonald & Shaw's No. 1 W. E. Black, 240 ft. N, 450 ft. W, SE cor. SE NE Sec. 12-13-28 ..... S.D. 1,805 ft.

MADISON COUNTY

Phillips Pet. Co. and F. S. Craver's No. 1, C Sec. 11-14-28. Tested 250,000 ft. gas 62 ft; S.D.

OUACHITA COUNTY

Artex Oil Co.'s No. 1 M. V. Smith, 330 ft. S, 330 ft. E, NW cor. SE NW, Sec. 31-15-17 ..... S.D.; bro. lime 2,390 ft.
Copenhaven et als' No. 1 Warnick, Sec. 2-15-17 ..... S.D. 2,190 ft.
Hobler & Erickson's No. 1 Rumph & Tyson, 300 ft. N, 300 ft. W, SE cor. Sec. 13-15-15 ..... Set 10 in. at 98 ft.
C. H. McDonald's No. 1 Fogle, Sec. 13-14-16 ..... S.D. 2,301 ft.; W.O.
A. P. Smith et als' No. 1 Reynolds, C SW NW, Sec. 21-14-17 ..... Cmtd. 10 in. 42 ft. S.D. 420 ft.

PIKE COUNTY

Theo. Davis, trustee's No. 1 Ruth Wilson, 200 ft. S, 200 ft. W, NE cor., Sec. 25-5-26 ..... Straightening crooked hole; T.D 718 ft.

POPE COUNTY

Cosden Oil Co.'s No. 1 Mo. Pac. R.R., 660 ft. N, 660 ft. E, SW cor. NW SE Sec. 13-9-9 ..... Fishing for tools 750 ft.
M. W. Greeson's No. 1 C. S. Parke, 330 ft. N, 330 ft. W, SE cor. Sec. 21-8-24 ..... Location.

PRAIRIE COUNTY

Transcontinental Oil Co.'s No. 1 Louis Novak, 330 ft. E, 330 ft. N, SW cor. SW NE, Sec. 36-2n-6 ..... Drlg. 2,430 ft.

SABINE PARISH

Bridges-Clark Oil Co.'s No. 1 J. W. Guy, 300 ft. N, 300 ft. E, SW cor., Sec. 33-10-12 ..... Rigging up.

ST. FRANCIS COUNTY

Brownlee Drlg. Co.'s No. 1 Whitted, 110 ft. N, 110 ft. E, SW cor. SE NW Sec. 28-4-1 ..... S.D.; funds, 300 ft.

UNION COUNTY

Addie & Modisette's No. 1 Union Sawmill, SW cor. SW SE Sec. 25-19-12 ..... Location.
Alcud Oil Corp.'s No. 1 J. A. Haney 660 ft. W, 300 ft. S, NE cor. SW SE Sec. 1-17-16..... Location.
Sam Arrendale's No. 1 Gallagher & Nelson, 200 ft. N and W, SE cor. Lot 5, Sec. 15-18-17 ..... Fishing for slip; T.D. 2,268 ft.
Bredham and others' No. 1 Craig, SW cor. NW NE Sec. 6-18-15 ..... Cmtd. 6-in. 2,079 ft.
W. M. Coates, trustee's No. 1 McDuffie, Sec. 32-19-17 .... Tested salt water 4,071 ft.; W.O.
S. Y. Dorfman's No. 1 Simmons, 150 ft. N, 150 ft. E, NW SW, Sec. 13-16-15 ..... S. D. 1,687 ft.
O. W. Estes' No. 1 Felsenthal, 330 ft. S, 330 ft. W, NE cor. NE NW Sec. 2-18-15 ..... S.D.; W.O. 125 ft. oil and S.W. in hole; T.D. 2,191 ft.
O. W. Estes' No. 1 Telford, 320 ft. S, 320 ft. E, NW cor. SW, Sec. 35-17-14 ..... Cmtd. 6⅝ in. 2,130 ft.; S. D. 2,230 ft.
Joe Modisette et als' No. 2 Union Sawmill, 1,620 ft. W, 1,020 ft S, NE cor., Sec. 14-18-14 ..... D.S. test 2,195-2,235 ft; 5 joints mud and oil; cmtng. 6⅝-in 2,193 ft. Stdg. 1,800 ft. in fluid 10% S.W. T.D. 2,235 ft.
Oil Well Corp.'s No. 1 Union Sawmill, 150 ft. S, 150 ft. E, NW cor., Sec. 10-19-14 ..... Began drlg. Dec. 23.
Stark et als' No. 1 Ainsworth, NE cor. NW NE NE, Sec. 8-19-16 ..... S.D.; fuel; T.D. 2,005 ft.

VAN BUREN COUNTY

Glenn Cole et als, trustee's No. 1 Scanlan, 200 ft. S, 200 ft. W, NE cor. SE NW Sec. 5-19-13 ..... S.D. 50 ft.

WASHINGTON COUNTY

O'Hara & Shetterly's No. 1 Boyd, SE cor. SE NE, Sec. 12-16-32 ..... Spudded Sept. 1928; S.D. 140 ft.; resumed drlg. Aug. 25; U.R.; T.D. 150 ft.
C. H. Willoughby's No. 1 Jones, Sec. 34-16-30 ..... Drlg. 1,640 ft.
Lincoln Leaseholding Synd.'s No. 1 Lincoln, Sec. 30-15-32 ..... S.D. 1,500 ft.

WHITE COUNTY

Letona Synd.'s No. 1 Letona, SE cor. NW SW Sec. 35-9-8. Cmtng. 5 3/16-in. 3,500 ft; S.D.

EAST TEXAS

CAMP COUNTY

Rogers et als' No. 1 Enfelt, R. M. Montgomery Sur..... Tested dry 1,870 ft.; S.D., 1,920 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossier, E. Hughhart Sur..... Drlg. 2,050 ft.
Shad Harper's No. 1 W. R. Garland, J. Wagley Sur..... S.D. 1,862 ft.

(Continued on Next Page)

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hundreds of industries . . .

thousands of individual businesses

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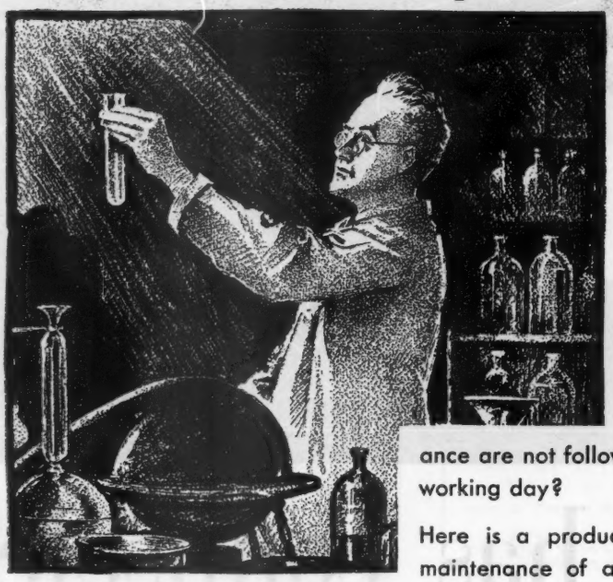

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CONSOLIDATED ASHCROFT HANCOCK

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Specify Catalogs Desired:

American Dial Thermometers	G-5	American Recording Gauges	E-5	Ashcroft American Gauges	T-5
American Glass Thermometers	F-5	American Draft Gauges	B-5	Consol. American Safety Valves	Z-5
American Recording Thermometers	H-5	American Gauge Testers	D-5	Consol. American Relief Valves	V-5
American Quality Gauges	A-5	American Tachometers	J-5	Hancock Globe & Check Valves	X-5
American Temperature Controllers	R-5	Ashcroft Power Control Valves	M-5	Metropolitan Injectors	Y-5

Johnson Pet. Co.'s No. 2 Randolph, Edward Dean Sur... S.D. 2,000 ft.

SHELBY COUNTY

Chapperall Oil Co.'s No. 2 Holt, Matthew Moore Sur.... S.D. for orders 3,004 ft.

MISSISSIPPI

ALCORN COUNTY

Alcorn Pet. Co.'s No. 1 Matthews, SE cor. Sec. 14-2s-7e.. Jarring out 6-in. to reset at 2,430 ft; T.D. 2,735 ft.

CHICKASAW COUNTY

Hightower & Golson's No. 1 Flemming, NE cor. Sec. 20-13-3 ..... S.D; quicksand 1,240 ft.

HINDS COUNTY

Harry Gerson's No. 1 Edward House, Blk. 16, West Jackson Subd., City of Jackson, in Twp. 5n, Range 1e ..... Rig up.

Oscar Brown's No. 1 Riverside (formerly Hennessee et als') SE cor. SE SW Sec. 23-16-5 ..... Set 12½-in. 30 ft.; S.D. 1,050 ft.

Love et als' No. 1 Mayes, Sec. 2-5-1e ..... Cmtd. 10-in. 735 ft.

Mrs. Reeder et als' No. 1 State, SE cor. NW NW Sec. 25-6-1e ..... S.D. 2,895 ft.

HUMPHREYS COUNTY

E. C. Steele et als' No. 1 C. B. Box, SE cor. SE NE Sec. 25-14-4w ..... Set 12½-in. 60 ft.; S.D.

LAUDERDALE COUNTY

Lauderdale O. & G. Co.'s No. 1 Lackey, 990 ft. S and E, NW cor. NE Sec. 2-7-16 ..... Set 8¼-in. at 2,792 ft; T.D. 3,861 ft.

Meridian O. & G. Co.'s No. 1 Hauser, Sec. 33-8-18 ..... S.D. 2,696 ft.

J. R. Smith Oil Co.'s No. 1 C. F. Craig, Sec. 2-6-14 .... Derrick.

LAFAYETTE COUNTY

Banks-Goode et als' No. 1 May, 113½ rods S, 26 rods E, NW cor. SW Sec. 22-10-1w ..... Derrick.

LINCOLN COUNTY

La.-Miss Oil Co.'s No. 1 Pat Case, NE NE Sec. 21-8-6 .. Drlg. 2,060 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19 ..... Drlg. sand showing little gas; T. D. 2,858 ft.

Amory Pet. Co.'s No. 1 Hall, Sec. 8-13-19 ..... Running csg; T.D. 2,260 ft.

Park Bowser et als' No. 1 Cowart, second hole, Sec. 2-12-19 ..... S.D. 30 ft.

RANKIN COUNTY

Home Oil Prod. Co.'s No. 1 E. P. Rainey, NW NW Sec. 13-5-1e ..... Claim show gas 2,912 ft.; recmtd. 10-in. casing for test.

WARREN COUNTY

El Dorado Oil Co.'s No. 1 Dornbush, Sec. 8-18-5 ..... S.D. 2,395 ft.

YALOBUSHA COUNTY

Phillip Bros.' No. 1 James, Sec. 20-11-5 ..... Coring 3,568 ft.

Carter Oil Co. and J. D. Collett's No. 1 Blackmur, 330 ft. S, 990 ft. W, C Sec. 14-11-4 ..... Drlg. sand and shale 1,750 ft.

YAZOO COUNTY

Amerada Pet. Co.'s No. 1 Doherty, SW SW Sec. 24-12-2.. Rigging up.

TENNESSEE

DECATUR COUNTY

Chester County Oil Co.'s No. 1 Montgomery ..... Cmtd. 6-in. 1,040 ft.; drlg. hard gray lime 1,165 ft.

ALABAMA

LAMAR COUNTY

Briggs & Knapp's No. 1 Wefel, Sec. 25-12-14 ..... Cmtd. 4⅞-in. 1,660 ft; drlg. sandy shale 1,720 ft.

MARION COUNTY

Hobson and others' No. 1 John Clark, SE Sec. 29-11-14.. Drk. pattern.

SUMTER COUNTY

B. W. Bates' No. 1 fee, Sec. 3-18-1 ..... U.R. surface csg. at 300 ft.; to set 6-in.

WASHINGTON COUNTY

S. A. Hobson's No. 1 Hobson Bros., Sec. 9-8-2 ..... S.D.; S.W. flow at 1,450 ft.

S. A. Hobson's No. 1 Wilson, Sec. 27-7-1 ..... Drlg. 760 ft.

WEST TEXAS FIELDS

(Continued from Page 61)

had of disposing of the crude from the new pool. The second discovery may have enough weight on some pipe line company to bring a connection to the two pools, although companies having lines in this locality have heretofore refused to run oil from the Dunnigan discovery.

WEST TEXAS PRODUCTION
Week Ending December 28

County—	Wells	Bbls.
Crane County	327	35,656
Crockett County	45	1,773
Fisher County	7	1,330
Ector County	4	85
Garza County	5	50
Glasscock and Howard	454	36,933
Jones County	73	2,370
Loving County	17	990
Mitchell County	142	2,360
Pecos County	393	140,105
Reagan County	253	17,470
Runnels County	3	25
Scurry County	5	24
Upton County	245	9,650
Ward County	20	1,810
Winkler County	613	93,830
Total this week	2,606	344,461
Total last week	2,583	350,935
Difference	23	6,474

WEST TEXAS COMPLETIONS
Week ending December 28

Fisher County

Midwest Exploration Corp.'s No. 1 Steele, 660 feet from south and 440 feet from west of Section 210, Block 1, H.& T.C.R.R. Survey, topped the pay at 3,189 feet, was drilled to a total depth of 3,190 feet and had an initial production of 480 bbls. Landreth Production Co.'s No. 2 Cooper, 330 feet south and west of NE cor., Section 116, Block 1, H.&T.C. R.R. Survey, was dry and abandoned at 3,270 feet.

Jones County

Adsit and others' No. 1 Swenson, in the C NE cor. SE, Section 192, B.B. B.&C. Survey, was dry and abandoned at 2,508 feet.

Howard County

American-Maracaibo's No. 2-B Settles topped the pay at 2,945 feet, was drilled to a total depth of 2,948 feet and had an initial production of 400 bbls. Magnolia Petroleum Corp.'s No. 13 Roberts, 2,440 feet north and 1,650 feet east of SW cor., Section 136, Block 29, W.&N. W.R.R. Survey, topped the pay at 2,938 feet, was drilled to a total depth of 2,943 feet and had an initial production of 215 bbls. in 18 hours. Humble Oil & Refining Co.'s No. 6 Clay topped the pay at 1,827 feet, was drilled to a total depth of 1,870 feet and had an initial production of 98 bbls. Midwest Exploration Co.'s No. 5-C Clay, 990 feet from east and south of Section 138, Block 29, W.&N.W.R.R. Survey, encountered the oil sand at 1,781-92 feet was drilled to a total depth of 1,796 feet and had an initial production of 90 bbls. Moody Oil Co.'s No. 29-B Roberts topped the pay at 1,880 feet, was drilled to a total depth of 1,911 feet, was shot with 15 quarts at 1,896-1,906 feet and had an initial production of 25 bbls. Its No. 32-B Roberts topped the pay at 2,328 feet, was drilled to a total depth of 2,625 feet and had an initial production of 65 bbls. Shell Petroleum Corp.'s No. 2 Abrams, 2,310 feet from south, 990 feet from east of Section 13, Block 33, Township 2-S, T.&P.R.R. Survey, topped the pay at 2,135 feet, was drilled to a total depth of 2,350 feet and had an initial production of 962 bbls.

Pecos County

Humble Oil & Refining Co.'s No. 1 Cunningham, in the C SW, Section 34, Block 11, H.&G.N.R.R. Survey, was dry and abandoned at 2,013 feet. Landreth Production Co. and Dunning's No. 1 McDonald, in Section 40½, Block 12, H.& G.N.R.R. Survey, was dry and abandoned at 1,670 feet.

Upton County

Humble Oil & Refining Co.'s No. 13 Ricker topped the pay at 2,105 feet, was drilled to a total depth of 2,208 feet and had an initial production of 196 bbls. fluid 10 per cent water.

Taylor County

Adams and others' No. 1 Lowe, 150 feet from west and north line of Lot 19, League 120, Guadalupe County School Land, 15 miles southwest of Abilene, averaged 50 bbls. 35.1 degree gravity oil daily at 2,384 feet. This well will be drilled deeper into the pay.

PIPE LINE RUNS
December 11 to 18
Runs Through Trunk Lines

	Last period
Atlantic P. L. Co., Port Arthur	25,000
Gulf P. L. Co., to coast via Ranger	31,985
Humble P. L. Co., Comyn, Tex.	44,993
Humble P. L. Co., Ingleside	51,646
Illinois P. L. Co., Del Rio, Tex.	42,105
Magnolia P. L. Co., De Leon, Tex.	15,240
Pasotex P. L. Co., El Paso, Tex.	6,842
Shell P. L. Co., to Healdton, Okla.	33,245
Shell P. L. Co., Houston Tex.	18,726
The Texas Company, Houston, Tex.	26,313
Total	296,195

Tank Car Shipments

Landreth Prod. Co., Crossett	478
Humble P. L. Co., McCamey, Tex.	...
Reagan County Pur. Co., McCamey	339
Thomas & Brann, Grant City	120
Orient Co., McCamey	100
American Pet. Co., Pyote	...
Southern Crude O. P. Co., Wickett	20,689
Total	22,226

Runs to West Texas Refineries

Bluebonnett Ref. Co., Wickett	.....
Burford Ref. Co., Pecos	5,133
Col-Tex Ref. Co., Colorado	7,500
Cosden Ref. Co., Big Spring	6,759
Great Western Ref. Co., Big Spring	3,485
Humble Oil & Ref. Co., McCamey	.....
Mid-Tex Ref. Co., Midland	1,500
Tonkawa Ref. Co., Pyote	.....
Big Spring Ref. Co., Big Spring	2,040
Richardson Ref. Co., Big Spring	3,537
Wickett Ref. Co., Pyote, Tex.	300
Total	30,254

Summary

	Last period	This period
Pipe line runs through trunk lines	321,659	296,195
Tank car shipments	21,899	22,226
Runs to West Texas refineries	30,344	30,254
Total daily distribution	373,902	348,675
Total daily production	347,717	342,132
Daily average from storage	26,185	6,543

PECOS COUNTY
Week Ending December 24

Company, lease—	Wells	Prod.
M. H. Black:		
Fee	1	10
California Co.:		
Yates—Lease 1	19	10,479
Smith—Lease 1, Sec. 37	5	621
Smith—Lease 1, Sec. 23	8	2,093
Smith—Lease 1, Sec. 21	5	876
Smith—Lease 2	3	110
Smith—Lease 3	13	1,843
Smith	2	19
Tippett—Lease 1	1	30
University	1	53
Continental Oil Co.:		
Yates-A	8	663
Salvage	..	4,399
University-A	3	188
Cosby Drlg. Co.:		
Smith	2	660
Dorn & McGee:		
Pecos Valley	1	23
Grayburg Oil Co.:		
Pecos River Bed	6	332
Salvage	..	191
Gulf Prod. Co.:		
All leases	42	16,938
Henshaw Oil Corp.:		
University	1	45
Humble Oil & Ref. Co.:		
Smith-A	12	1,928
Smith-B	7	1,097
Kirby Pet. Co.:		
Tippett	2	60
Kirby Pet. & Edson:		
Tippett	1	240
McCarty Oil Co.:		
Gray	1	10
Bennett	1	8
McMan Oil & Gas Co.:		
Smith-A	1	1,775
Smith-B	4	1,401
Smith-C	9	1,035
Tippett	3	336
Richardson	2	125
McMan and Continental:		
Yates	17	6,433
Mid-Kansas and Transcontinental:		
Yates-A	28	20,702
Yates-B	27	7,111
Salvage	..	177
Yates-C	11	8,185
Salvage	..	246
Yates-D	7	7,904
Yates-E	3	833
Yates-F	4	845
Yates-G	3	1,259
Yates-H	10	8,768
Smith	6	2,809
Smith-Taylor	19	4,209
Landreth Prod. Co.:		
University-A	3	618
University-C	3	1,263
University-D	3	.....
University-E	1	126
University-F	2	249
University-G	3	5
University-H	1	16
Landreth and World:		
University-B	6	3,108
J. D. O'Mara:		
Butz	1	27
Pecos Valley Oil:		
Fee, Sec. 22, Blk. 26	3	74
Phillips Pet. Co.:		
Monroe	2	150
Ramsey	4	1,125
Smith	3	650
Plymouth Pet. Corp.:		
Perry	1	40
Red Bank Oil Co.:		
Smith	5	436
Savoy & Maxda:		
Smith	3	550
Shell Pet. Corp.:		
Tippett	1	2,877
Smith-A	11	1,459
Smith-B	1	641
Smith-D	4	827
University-Bower-C	4	1,025
Smith-E	1	24
Simms Oil Co.:		
Smith	7	7,144
Skelly Oil Co.:		
Tippett	2	222
Taylor-Link:		
University	7	726
World Oil Co.:		
University	1	60
Total Pecos Field	392	140,663

DAILY AVERAGE PRODUCTION BY LEASES WINKLER COUNTY
Week ending December 24

Company, farm—	Sec.	Blk.	Wells	Prod.
Amerada Pet. Corp.:				
Cowden	3	B-12	3	32
Atlantic O. P. Co.:				
Hendricks-A	34	B- 5	7	1,519
Hendricks-B	44	26	6	569
Hendricks-C	29	B- 5	8	679
Hendricks-B	41	B- 5	6	661
Hendricks-G	46	26	7	22
Atlantic O. P. Co.:				
Hendricks-F	40	26	12	512
Bankers Prod. Co.:				
Hendricks	30	B- 5	1	...
V. T. Bolin:				
Brown-Altman	4	B- 5	1	...
California Co.:				
Hendricks	29	B- 5	7	592
Continental Oil Co.:				
Hendricks	33	26	4	696
Hendricks-A	29	26	2	51
Hendricks-B	34	26	2	...
Cranfill & Reynolds:				
Hendricks-A	28	B- 5	2	212
Hendricks-B	33	B- 5	1	67
Hendricks-C	33	26	2	401
Hendricks-E	33	26	2	142
Cranfill and Texon:				
Hutchings	47	26	2	332
Culberson Bros.:				
Hendricks	40	B- 5	1	59
Eastland Oil Co.:				
Hendricks	35	B- 5	2	262
Hendricks-B	46	26	1	101
Gulf Prod. Co.:				
Hendricks-A	34	B- 5	13	4,718
Hendricks-B	45	26	11	2,395
Hendricks-C	40	B- 5	6	485
Hendricks	44	26	3	514
Cowden	3	B-12	3	100
Humble Oil & Ref. Co.:				
Hendricks-A	34	B- 5	17	4,118
Hendricks-B	29	B- 5	6	1,568
Hendricks-C	32	26	8	436
Hendricks-D	41	26	1	390
Hendricks-B	39	26	3	223
Hendricks-C	10	B-12	13	6,089
Walton	48	26	1	91
Independent Oil & Gas:				
Hendricks-A	34	B- 5	7	769
Howe-B	44	26	3	116
McCabe	36	B- 5	2	114
Vardeman-B	41	B- 5	6	247
Lion Oil Co.:				
Hendricks-A	41	B- 5	11	1,204
Hendricks-B	34	B- 5	13	2,529
Hendricks-C	45	26	14	3,841
Hendricks-D	44	26	1	79
Magnolia Pet. Co.:				
Hendricks	29	B- 5	8	358
May Prod. Co.:				
Hendricks	34	26	1	10
American Maracaibo:				
Hendricks-A	28	B- 5	1	16
Hendricks-B	28	B- 5	2	91
Mining & Engineering:				
Hendricks	10	B-12	1	...
Murchison and Cranfill:				
Hendricks-A	35	B- 5	2	260
Hendricks-B	35	B- 5	3	419
Hendricks-C	35	B- 5	1	...
Hendricks-H	35	B- 5	1	506
Hendricks-I	34	26	1	87
Republic Prod. Co.:				
Hendricks-A-B	45	26	12	1,051
Hendricks-C	41	B- 5	5	89
Prairie Oil & Gas Co.:				
Hendricks	40	26	6	1,141
Cowden	3	B-12	6	1,894
Shell Pet. Corp.:				
Hendricks-A	45	26	6	499
Hendricks-B	29	B- 5	6	2,115
Hendricks-C	29	B- 5	8	395
Hendricks-D	41	B- 5	6	86
Hendricks-E	40	B- 5	3	248
Hendricks-F	46	26	8	222
Hendricks-C	39	26	1	61
Shell-The Texas Company:				
Cowden-A	3	B-12	6	1,691
Hendricks	45	26	6	2,888
Hendricks-A	29	B- 5	11	734
Hendricks-B	40	26	6	116
Hendricks-C	40	26	6	1,150
Hendricks-D	40	26	6	186
Hendricks-E	39	26	4	92
Skelly Oil Co.:				
Hendricks	40	26	12	3,442
Hendricks-B	10	B-12	2	15
Hendricks-C	30	26	1	71
Southern Crude O. P. Co.:				
T-67 Hendricks-A	42	B- 5	3	97
T-67 Hendricks-3-A	4	B-12	4	330
T-67 Hendricks-B	44	26	5	310
T-67 Hendricks-3-B	33	26	4	428
T-67 Hendricks-C	33	B- 5	5	370
T-67 Hendricks-2-D	27	26	5	870
T-67 Hendricks-E	42	B- 5	4	110
T-67 Hendricks-F	33	B- 5	5	457
T-68 Hendricks-3-A	35	B- 5	2	114
T-68 Hendricks-B	46	26	2	75

T-88 Hendricks-A ..	44	26	6	510
T-88 Hendricks-B ..	4	B-12	6	134
T-88 Hendricks-C ..	28	B- 5	8	1,066
T-88 Hendricks-D ..	4	B-12	6	1,815
T-88 Hendricks-H ..	28	B- 5	6	604
T-88 Hendricks-I ..	20	B- 5	7	343
T-88 Hendricks-J ..	30	B- 5	5	430
T-88 Hendricks-K ..	41	26	7	857
T-88 Hendricks-L ..	4	B-12	4	380
T-88 Hendricks-M .	35	26	33	9,699
T-88 Hendricks-N ..	28	26	7	2,064
T-88 Hendricks-O ..	22	26	4	826
T-88 Hendricks-P ..	28	26	2	295
T-88 Hendricks-Q ..	27	26	2	725
T-88 Hendricks-R ..	27	26	3	881
T-88 Hendricks-S ..	34	26	4	1,578
T-88 Hendricks-T ..	34	26	7	913
T-88 Hendricks-U ..	41	26	10	1,023
T-88 Hendricks-V ..	29	26	1	72
T-88 Hendricks-W .	5	B-12	1	232
T-88 Hendricks-CX .	21	26	4	916
T-89 Hendricks-A ..	45	B- 5	3	387
T-89 Hendricks-B ..	35	B- 5	2	310
T-89 Hendricks-C ..	35	B- 5	3	547
T-89 Hendricks-D ..	35	B- 5	1	155
T-89 Hendricks-E ..	40	B- 5	3	76
T-89 Hendricks-F ..	40	B- 5	2	186
T-89 Hendricks-H ..	46	26	2	134
T-89 Hendricks-I ..	10	B-12	2	31
T-89 Hendricks-J ..	9	B-12	8	559
T-89 Hendricks-L ..	15	B-12	2	590
T-90 Hutchings ...	47	26	2	362
Texon Oil & Land Co.:				
Hendricks-A	41	B- 5	6	327
Hendricks-B	45	26	6	1,314
Total Hendricks Pool			583	90,370
Leck Area				
Atlantic-Kesslar & Logan:				
Leck	3	74	2	88
Amerada Pet. Corp.:				
Leck	3	74	2	222
Empire Gas & Fuel Co.:				
Daugherty	3	74	3	94
Magnolia Pet. Co.:				
Scarborough	1	C-22	2	173
Gulf Prod. Co.:				
Scarborough	1	C-22	1	52
Daugherty	3	74	1	460
Shell-Llano Oil Co.:				
Daugherty	1	C-22	5	268
Shell-Danciger:				
Daugherty	3	74	2	67
Skelly Oil Co.:				
Daugherty	22	16	4	1,033
Tidal Oil Co.:				
Scarborough	1	C-22	1	81
Prairie Oil & Gas Co.:				
Leck	16	74	1	366
Daugherty	3	74	1	119
Scarborough	1	C-22	1	55
Warner-Quinlan:				
Leck	3	74	1	398
Total Leck Pool			27	3,476
O'Brien Pool				
Continental Oil Co.:				
Morton-A	10	B-12	1	72
Morton-B	10	B-12	2	77
Wentz Oil Corp.:				
Morton	10	B-12	1	71
Simms Oil Co.:				
Sealy	50	F	1	18
Richardson et al:				
Stockton	50	F	1	..
Total O'Brien Pool			6	238
Grand total Winkler County ..			616	94,084

NEW PROCESS IN CRUDE DEHYDRATION

(Continued from Page 38)

to the shell or container of the apparatus.

Description of Apparatus

A brief description of the apparatus will be necessary to make this clear. The Dehydrator (see Figure 1) consists essentially of a vessel or tank, 6 feet in diameter and 13 feet high, set vertically. Into the top of this tank a single rod of 1-inch or less in diameter, of cold rolled steel, and of adjustable length is inserted through a specially designed inlet bushing. The lower portion of this bushing is surrounded by a cone or bell-shaped baffle extending below the end of the bushing. Carbonic acid gas (CO_2) delivered from ordinary commercial pressure containers is admitted within this baffle; a liquid level control regulates the admission of the CO_2 and maintains the level of the oil within the cone at a point about 1 foot below the end of the bushing. In this way there is no contact of oil with the bushing, and hence no danger of moisture, dirt or carbon deposits thereon, deposits which would induce leakage of current, lowering the potential of the charge on the electrode. CO_2 is used as not forming an explosive or inflammable mixture with petroleum vapors. Nitrogen or any other inert gas would serve the same purpose, but CO_2 is selected as more generally obtainable. No gas or mixture containing free oxygen in any amount is permissible.

The usual openings for the introduction of the stream of oil, the drainage of the precipitated water and solids, and the removal of the stream of cleaned oil are provided.

Installed on the outlet pipe is the cage flow valve control. By the action of this valve the charging current is instantly cut off whenever the inflowing stream of oil is stopped. This valve, though of rugged construction, is balanced to operate by the kinetic energy of the moving stream of oil in the outlet pipe, and is independent of fluid level. Opening and closing with this valve is a Mercoid switch, controlling current to the transformers. In a special case, where it might be desired to subject a batch of oil to prolonged treatment, a manually operated switch could be used, by-passing the closed Mercoid switch.

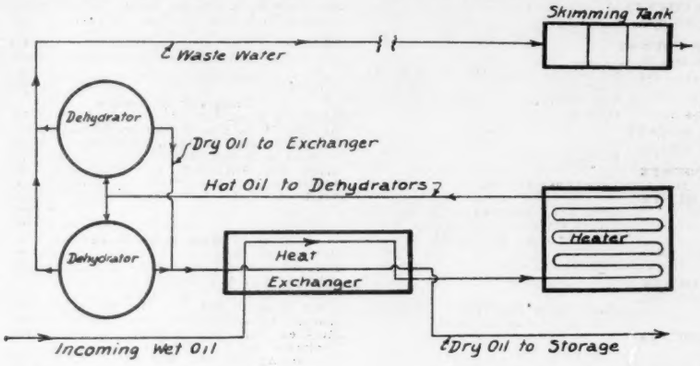


FIG 4

There is no other apparatus of any kind within the tank. Mounted on the tank is a transformer, designed especially for this work and manufactured in our own shops, which takes the field current at 110, 220 or 440 volts; 50 or 60 cycle as the case may be, and transforms it to 100,000 volts. The high tension lead connects direct by means of a special bushion to the electrode, and is so arranged that nowhere is there any exposure of the high lead. It is protected by a special bushing and is completely immersed in transformer oil. There is, therefore, no hazard of any kind by reason of the use of high voltage. This high tension current passes direct to the rod electrode.

Action of the Charge

The action of the charge on the electrode is precisely the action of the space charge which surrounds any high tension conductor. This phenomenon was investigated by Dr. Harris J. Ryan of Stanford University, who was, it is believed, the first to establish its existence and to investigate its properties. Perhaps a brief extract from a paper by Doctor Ryan and Joseph S. Carrol will be in order:

"When a space charge is formed about a conductor in corona, a few of the ions constituting the charge go astray and diffuse widely through the air. The voltage is alternating and so is the space charge. Following the application to the conductor of a corona-forming positive voltage crest, the charge is made up of positive ions. The next voltage crest will be negative; it will discharge the positive ions in the space charge, and set up in their place a corresponding charge of negative ions. The net result of the diffusion of the alternating positive and negative charges is a small, but very real, rectifying effect, negative at the start of the corona and positive when fully established."[1]

The diagrams, Figures 2 and 3, will serve to illustrate this action. Figure 2A represents the sine wave of the charging current on the electrode, and Figure 2B the action of two charged particles. At the time-point A, Figure 2A, the electrode is neutral, hence there is no ionic emanation; at time-point A_1 there is a positive voltage on the electrode, whose magnitude may be represented by A_1—a_1. There is a positive ionic discharge from the electrode, the ions so discharged attaching themselves to the water particles in the surrounding mass; these particles are now charged positively, and tend to move outwardly from the electrode. Figure 2B shows the action of two particles, Particle a, charged at A_1, and Particle b, charged at B_1. Particle a moves outwardly as shown at Figure 2B. At time-point A_2 a second positively charged particle starts on the trail of Particle a; both being charged with the same sign, there is a tendency to repel one another, or to accelerate the outward movement of Particle a, and to decelerate that of the succeeding particle; but particle charged at A_3 now follows, checks the deceleration of the preceding particle, and further accelerates Particle a. This process continues during the positive phase of the alternation, filling a considerable space around the electrode with positively charged water particles.

At time-point B, the phase changes, and thereafter negatively charged particles are emitted from the electrode. These in turn attach themselves to water particles and move outward. The "b" particle charged negatively at B_1 is now in pursuit as it were of the particle charged positively at A_3, but now there is a difference in sign between the charges, accelerating the "b" particle and decelerating that charged at A_3; the attraction between the unlike or opposite sign on the charges on these particles causes them to rush together in order to neutralize the charges; this takes place with sufficient violence to rupture the separating films of the oil envelopes, so permitting the coalescence of the two particles into a droplet. The successively charged particles carrying the negative charge follow during the time period from B to C, permeating the zone to which the positively charged particles have previously been impelled, neutralizing them in turn; each neutralization being accompanied by the coalescence of particles into droplets, and droplets into drops.

Figure 3 shows the distribution of the positively and negatively charged particles at various time-points as shown on Figure 2A.

This actual process of course is infinitely more complex and repeats from 40,000 to 50,000 times in the course of the travel of the oil through the dehydrator tank, the larger particles of water become carriers of a larger charge, and can in turn neutralize larger drops or a larger number of droplets of water charged with the opposite sign. For instance, a drop of water one-sixteenth inch in diameter, charged to capacity with positive ions, could attract to itself

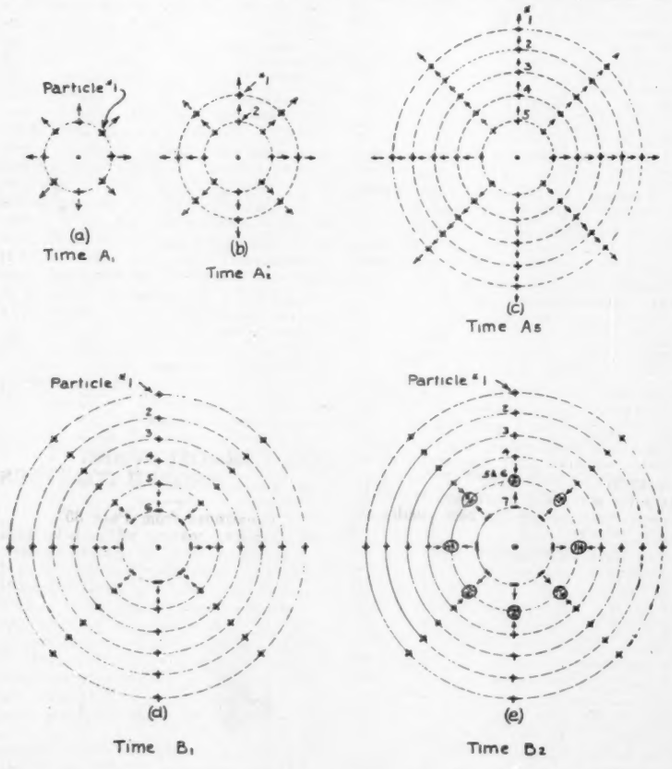
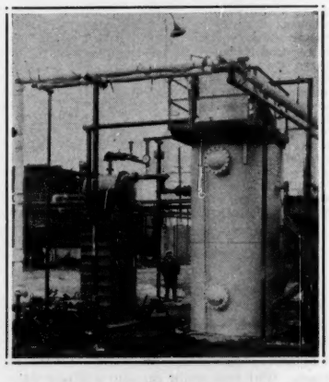


Fig. No. 3.



New type Cage dehydrator. Note the transformer above the platform.

[1] "The Space Charge That Surrounds a Conductor in Corona at Sixty Cycles," by Joseph S. Carrol and Harris J. Ryan.

many thousand particles .001 inches in diameter charged negatively.

The zone surrounding the electrode in which this action takes place will vary with the gravity and the viscosity of the oil, with the water content in the oil, and also with the nature and amount of the solids dissolved therein, with the frequency of the current, and with the voltage impressed. One secret of successful operation is to have the diameter of the shell sufficiently large, without undue excess, that the action above described can take place without the charged particles migrating to the shell of the tank, as to an opposite electrode, and there surrendering their charge. Should this occur with any considerable number of ions, there would be a passage of current through the oil, which would be a power-consuming current instead of a charging current; a power-consuming current being much less efficacious to break emulsions than a charging current, as well as using many times more electrical energy.

Degree of Dryness

The degree of dryness than can be attained depends on:

1. The gravity differential between oil and water. In oil of 10° B. there is no difference in specific gravity when the water is pure, hence no tendency to settle, no matter to what extent coalescence may take place. Fortunately the water is never pure, but always contains minerals in solution, frequently with a specific gravity in excess of 1.1, while a 14° B. oil has a specific gravity of 0.973. Owing to the differing coefficients of thermal expansion of oil and water, the gravity differential becomes greater at the higher temperatures used in dehydration.

2. The viscosity of the oil. In oils of great viscosity the mobility of the charged particle is decreased as well as of the charged water droplets; thus the zone of action is more restricted. The coalescence of the droplets is hindered, and their downward movement under the action of gravity decelerated.

Heat is usually applied to reduce the viscosity of the oil to a point where the ionizing water particles can move freely in the suspended medium, and the droplets descend in the oil mass.

Heat has the further advantage of reducing skin tension in the envelopes of oil inclosing the water particles, thus rendering rupture and coalescence easier.

3. The rate of flow in the vessel. The upward velocity of the oil in the dhydrator vessel must be less than the downward relative velocity of the water droplets. Inasmuch as the downward movement of the droplets under the influence of gravity in any given medium is a function of their size, it means that for any given oil condition and velocity there is a corresponding critical magnitude of droplet varying with (not as) the upward velocity of the fluid mass. Droplets of magnitude less than this critical size will not separate in the dehydrator, but will be carried along with the effluent stream; they will, however, probably settle out later in the storage tanks.

4. The time of exposure to the ionizing charge.

In the more finely subdivided emulsions it is probable that the particles will pass through many cycles of charging, uniting and discharging before they attain sufficient magnitude to settle freely.

5. The intensity of the ionizing charge. This depends on the voltage applied to the electrode. During the experimental stage of development of this process voltages of 16,500 and 33,000 were successfully applied; and a comparison of results was so strongly in favor of the higher voltage that it was determined to build the operating plant as a 66,000-volt installation. This in turn has so justified expectations that the plants now building will be equipped to operate 100,000 volts. The mobility of the charged particle at this high voltage is correspondingly high, also the number of particles emanating is proportionately greater, hence the power to reach out into the mass of emulsified oil, pulling in and charging the water particles will increase more nearly as the square of the voltage. The more complete the impermeation of the mass with the ionizing charge the more complete the resultant coalescence of the water particles, and the more perfect the dehydration.

In the operation of the dehydrator there seems a distinct hint that in any given oil, a given voltage charge speedily acts on all water particles of a given size or larger, but has comparatively little action on the more minute particles; any further increase in voltage reaches another smaller range of particles. What will be the maximum voltage that can be applied with advantage to meet special demands is yet undetermined, but it is evident that the proper limit has not been reached. We clearly see that, if the demand for oil with less than 0.1 per cent of water should arise, as indeed it may when it is seen to be attainable, certain refining and cracking processes may require the application of voltages far exceeding those so far attempted.

Installed at Pipe Line Station

A cage dehydrator plant was installed at the Buena Vista Lake Station of the Pan American Petroleum Co.'s pipe line to handle a stream of about 5,000 to 6,000 bbls. of oil per day. Prior to this time this oil had been treated by an evaporative process, the oil being heated to a temperature of 250° to 270° F. The general results were satisfactory in producing an oil of low water content, but had the effect of leaving a portion of the salt which had been in solution in the water, carried as suspended matter in the oil. The operation called for frequent stoppage of the plant for cleaning out accumulated salts and solid matter. The cost of treatment varied from 3½ to 3¾ cents per bbl.

In the cage dehydrator the influent wet oil passes through a heat exchanger to a heater, where it is heated to 140° to 145° F., thence direct to the dehydrators, which are operated in parallel, although occasionally the entire stream is passed through one unit. Figure 4 shows the flow diagram of the system. No provision is made for operation in series, that is, passing the effluent from one unit into the second unit for further treatment. The dehydrated oil passes from the top of the treater through the heat exchanger where it is cooled to about 110° F., and thence to storage.

The waste water passes to a skimming tank, where any oil which may have been drained or carried over is caught and returned to storage, and from which the effluent water is discharged almost crystal clear.

In the description of the action of this cage dehydrator it will be seen that there is no outward flow of current beyond that necessary to charge the electrode and the surrounding water particles in the oil. No return current, only the charging current is applied; for this reason the power consumption is remarkably light. In fact, the meters in the circuit do not indicate any consumption of current beyond that accounted for by losses in the transformers themselves. More delicate calibration of transformers and of meters of course would show that there is a proportion of the current doing the actual work of ionization, but probably the working current is only a small fraction of 1 ampere. The total current consumption for all purposes (except operation of pumps) for two units when treating 6,000 bbls. of oil per day is from 35 to 50 kilowatt hours per 24-hour day.

Summary of Results

A summary of the results of the first two months of complete operation will be of interest.

	Influent Oil			Water dischd.	Effluent Oil		
	Bbls.	W.& Grv.	B.S. %	Bbls.	Bbls.	W.& Grv.	B.S. %
		° B.				° B.	
July	166,967	18.0	16.2	25,586	141,581	19.8	1.3
Aug.	166,167	17.8	18.5	27,514	138,653	19.8	1.3

This plant has now been in continuous operation for 13 months, during which time it has treated 2,027,113 bbls. of wet oil, has delivered 1,713,756 bbls. of clean oil, and has discharged 313,357 bbls. of water. The cut in the effluent oil above is from samples taken at the discharge of the dehydrator. When this oil is allowed to stand in the storage tanks, there is a further settlement of some of the smaller particles that had been successfully demulsified, but which were carried over by the stream of oil; this settlement reduced the moisture content to from 0.5 to 0.8 per cent.

One unit was shut down in the eighth month of operation for the purpose of cleaning the bushing, as a certain amount of settlement had occurred on its surface, causing a slight leakage of current, which showed itself by an increase in the water content of the effluent, which rose to 1.6 per cent, of which 0.3 to 0.4 per cent was free water. The bushing of this unit was removed, cleaned and replaced and operation immediately resumed. Except for this, there has been no interruption of operation during this period from any cause whatsoever.

The water in this oil carries about 10 per cent of solids in solution, hence 4,700 tons of solids in solution have been removed from the oil with the water.

The cost per barrel of oil treated is from 0.8 to 0.9 cents.

In the ionizing process as described above, there is, however, more than merely the removal of the water particles and the solids in solution. Solids in suspension, the finer particles of sand and mud, are capable of carrying an electric charge. Certain of the ions attach to these solid particles in precisely the same manner as do water particles; on collision of such charged solid particles with oppositely charged water particles the solids become wetted, and ultimately settle out with the water. The samples as taken from the effluent invariably show either no sediment at all, or a negligible trace, all free solids having been removed.

In the development of this dehydrator many problems had to be met and solved; only a few of them will even be referred to, but mention may be made of a special regulating transformer which automatically regulates the applied voltage in inverse ratio to the conductivity of the oil, and which prevents overloading of transformer or equipment, applying to the varying condition of the influent oil the maximum voltage which that oil can take without the direct passage of current. The transformers, made to original designs and in a plant specially built for the purpose, give new economies in construction over any available on the market. An entirely new principle in plant control centers in a valve actuated by the kinetic energy of the moving stream, and independent of fluid level. A new type of inlet bushing for high voltage has been developed. Inlet bushings that are designed for 66,000 to even 88,000 volts where used in transformer oil have but a short life at 33,000 volts in crude oil containing a small part of 1 per cent of water or impurities; for a long while it seemed that the resistance of inlet bushing would be the limiting factor in the voltage applied. Many combinations and special devices were tested. At length a special material and treatment were evolved that makes the application of 100,000 volts practicable, and which, it is believed, can be used to 200,000 volts or higher if and when desirable.

Experience with other forms of dehydrators indicated that treatment at a temperature of 180° to 190° F. was necessary for successful operation. We find, however, that we get the best results at 140° to 145° F.

First Experimental Plant

Interesting and important was the work of the first experimental plant, built to test theories and to develop design. After successful runs on many crudes an attack was made on several hundred thousand barrels of accumulated tank bottoms. These contained from 40 to 60 per cent of water, emulsion and solids. They were regarded as almost untreatable, and as being a liability rather than an asset. They were treated with success, the oil recovery being complete.

Laboratory runs of several of the most refractory oils produced in the United States have been made with entire success.

A new plant has just been put in operation, involving certain minor changes in transformer design, which gives promise of even more positive control, and of greater electric efficiency. The current consumption, including transformer losses when treating 3,000 bbls. per day is about 1 kilowatt hour per hour per unit. The power current actually impressed on the electrode is probably not over one or two milleamps. An installation is also being made using a shel 10 feet in diameter. In this it is confidently expected that from 6,000 to 10,000 bbls. of oil can successfully be treated per day per unit. This size unit will only be suitable where large concentrations occur; for general use it is probable that the 6-foot size will prove most generally suitable.

The principal advantages of the new dehydrators are:

1. Greatly increased capacity, a unit being capable of handling 4,000 to 5,000 bbls. per day.

2. Ability to handle any oil, no matter what degree of impurities it may contain, without the addition of any chemicals or other agents, additions which subsequently have to be removed in the refining process.

3. A high degree of dryness in the oil. The most expensive place to remove water is in the refining stills. This treatment can give an oil of unexampled dryness for treatment.

4. The removal of practically all solids, both those suspended in the oil and those dissolved in the water. What this means in lessened deterioration of stills and refinery equipment all refinery operators will know.

5. Unexampled economy in operation. This is seen in decreased consumption of electrical energy; decreased heat demand for raising temperature of oil owing to lower temperatures used; decreased radiation losses owing to small exposed area of unit as compared with units of other systems (due to greatly increased daily capacity one unit of the cage system will treat as much oil as two or three units of any other system, hence radiation surface is about one-fifth that otherwise required and the exposed surface is at 140-145° F. instead of at 180-190° F.; the radiation heat loss of a Cage dehydration plant is only about one-tenth that of any other plant of the same daily capacity); high capacity of individual units; minimum labor or attendance required, and decreased plant investment. In the plant now in operation so far the entire time of three shifts of operators for the 24 hours has been charged against the dehydrator; experience, however, shows that he can perform many other duties and so divide the labor costs, or the same labor charge would care for a plant of two or three times present size. In effect, it will mean that the care of the dehydrator can be added to the present duties of a pumper or gauger, at no added labor charge. Even where the dehydrator had to carry the entire cost of three operating shifts the average cost of treatment, including all operating items, was $0.0082 per barrel of cleaned oil, or $0.00695 per barrel of fluid handled.

SOIL CORROSION AND PROPER COATINGS

(Continued from Page 35)

and protective coating which have been in the ground from six to eight years. By July 1 these specimens will be out of the ground and by next fall they will be cleaned up and they hope to have a report on them which can be submitted to the American Petroleum Institute at its annual convention next November.

About 3,000 specimens will be taken from the ground. They will consume the time of about four men operating continuously.

The bureau has prepared for the American Gas Association 42 different types of protective coatings and these will have been buried in 11 different places

by the end of this week and specimens of protective coatings not buried by that time will be buried in California next spring. Four sets of each of these specimens will be removed next September so that they may be reported upon at the annual meeting of the American Gas Association.

The bureau is also starting laboratory tests on these protective coatings so that it may be possible to determine in the laboratory the rate at which each specimen absorbs moisture to their resistance to distortion caused by the shrinking and swelling that takes place in the soil as a result of changes in the soil moisture.

The bureau is also starting a series of tests by which they hope to be able to describe coatings under test sufficiently to allow anyone interested to purchase on specification rather than on a trade name. The reason for this is that a number of manufacturers who sell under trade names do not always make coatings of the same material. One material may be as good as another but the bureau wishes to tell the public just what has been tested so that if they get the same material they will get the same results.

Selection of Materials

The bureau will test coatings which represent asphalt, coal tar, etc., but it is quite possible that they will not be able to find anything that is typical. These tests will not be of proprietary material as such but it is possible that they may take some proprietary material as the representative of a type.

The selection of the materials which will be tested will be made by the corrosion committee of the American Petroleum Institute and not by the Bureau of Standards which will only direct the making of the tests.

There is one other project of importance that the bureau is carrying on. They are attempting to study soil conditions encountered by pipe lines with the idea of determining what soil conditions or properties are the causes of corrosion. This relates to a test the bureau made last fall that apparently showed a close correlation of certain soil properties and the corrosion found along that line.

Other projects which the bureau is carrying on in the laboratory are intended to develop laboratory methods of testing protective coating so that by some short method they can determine the suitability of coatings for different kinds of pipe line conditions and determine whether a given soil is corrosive.

Many do not realize how little is known regarding the fundamentals of underground corrosion and its prevention. At present the Bureau of Standards does not have sufficient data to justify it in attempting to estimate the life of a pipe material in a given soil or in advising as to the relative merits of protective coatings. This does not mean that a consulting engineer is not justified in making estimates of soil corrosiveness, and in recommending definite methods of protecting specific lines. Some data are available and if he familiarizes himself with these data his employers will doubtless be better off with his advice than without it. There are a number of scientists who believe they can recognize corrosive soils and select satisfactory coatings, but the bases for their beliefs have not been sufficiently well established to justify the Bureau of Standards in attempting at this time to determine the corrosivity of soils or the protective value of pipe coatings.

If the bureau continues to pursue its present studies it should some time be able to do a great deal better than it can do now. The outlook is promising. Doubtless the bureau will be able in the course of a few years to identify a good many corrosive soils but there will always be cases in which it will miss the corrosive element. It will be able to pick out a majority of the cases in which the soil is corrosive and it will know a great deal more about corrosion than it does at this time. Undoubtedly it now knows a great deal more about corrosion than it did a few years ago and knows a great deal more about protective coating but it has not arrived at the time when it knows the whole story.

Working on An Alloy

A number of manufacturers are working to obtain an alloy with a hope of producing a pipe which will not corrode and several of them are making progress but just what progress is being made is not known. The bureau has no way of testing the merit of pipe or the material from which it is made except to subject it to the field tests they now apply, which requires years.

There are probably 100 or more makers of protective coatings. They are men who are earnestly striving to do their part in solving the problems the bureau has before it and within a few years it is confidently believed they will make a great deal of progress.

The Bureau of Standards is receiving numerous inquiries regarding underground corrosion and protective coatings and since it has insufficient data to directly answer these questions the best it can do is to refer inquirers to the literature on the subject and allow the writers to use their own judgment. Since some of the literature is not readily available to those remote from technical libraries, the bureau is considering the preparation of a circular letter containing a brief summary or abstract of the leading recent articles on underground corrosion and protective coatings.

The bureau engineers hope that eventually they will be able to tell engineers how to determine the corrosiveness of soils and the effectiveness of coatings under specific conditions, but when the methods of testing have been established the application of the tests to specific soils and coatings they believe should be the function of the consulting or pipe line engineer rather than that of the Bureau of Standards.

KEEPING CRUDE FLOWING IN CONTINENTAL LINES

(Continued from Page 63)

Falls system consists of 169 miles of main line and 286 miles of gathering line. Our own lines also carry crude to the Glenrock and Florence plants. We have 13 miles in the Glenrock district and 60 miles in the Florence district. Crude from the Shiprock area is handled through 92 miles of main line to the railroad at Gallup and 16 miles to the Farmington refinery. Our system at Artesia is 57 miles in length.

Continental's gathering systems are located in the following fields: Panhandle, Texas, 98 miles; Howard County, Texas, 22 miles; and Cat Creek, Montana, 42 miles.

In order to move the crude through the pipe line, it is necessary to subject it to certain pressure, therefore pump stations are required at various points, the location depending upon the size and length of the line and the amount of oil to be moved. The field receiving station is located at a low point adjacent to the producing area so that gravity lines may be run from the station to the producing lease tankage and the crude may flow down to the large pump station tanks by gravity movement without further cost to the pipe line company for a pumping operation from the field. These gravity lines are, of course, short lines, and are for the collection of small amounts of crude.

The receiving stations discharge through a main line to the next main line station where additional pressure pushes the stream on to the next station or tank farm. Our pump stations are located so as to give us a maximum pumping efficiency. In Oklahoma and Kansas we have nine main line and 10 gathering line stations; in Texas, 6 main line and 11 gathering line stations, while in the Rocky Mountain area there are 4 main stations on the Shiprock line and 2 gathering stations in the other districts, the balance of the oil being handled by field pumps direct to the refinery tank farms.

Owing to the cost of crude oil, great care is exercised by all pipe line employes in its handling. Tanks are made gas-tight to cut evaporation losses to a minimum and an hourly check between the pumping and receiving stations is maintained day and night while pumping, in order that we may know at all times that the stream of crude is coming through the line without loss.

PANHANDLE FIELDS

(Continued from Page 62)

& Cullum's No. 3 Deitrich had an initial production of 150 bbls. at 1,131-58 feet. Riggs' No. 1 Keeter had an initial production of 190 bbls. at 559-94 feet. Sun Oil Co.'s No. 17 Deitrich had an initial production of 130 bbls. at 1,142-52 feet. Wootten & Reed's No. 4 Casey was dry and abandoned at 625 feet.

Wichita County

Ascot Co.'s No. 3 Jackson encountered water sand at 1,820-29 feet and was dry and abandoned. Star Drilling Co.'s No. 3 Crudup had an initial production of 48 bbls. at 1,808-11 feet. Arkansas Fuel Oil Co.'s No. 35 Kemp & Kempner had an initial production of 54 bbls. at 1,-764-69 feet. H. Hobbs' No. 1 Warren had an initial production of 58 bbls. at 1,758-60 feet. McCarty Oil Co.'s No. 20 Kemp & Kempner had an initial production of 84 bbls. oil and 4 bbls. water at 1,760-66 feet. Panhandle Refining Co.'s No. 12 Burnett had an initial production of 5½ bbls. oil and half barrel of water at 1,420-30 feet. T. R. Ridgeway's No. 1 Obenhaus was dry and abandoned at 2,652 feet. Sheldon & Jamison's No. 2 Volkart had an initial production of 80 bbls. at 1,929-33 feet. Staley & Wynne's No. 1 Warren was dry and abandoned at 1,850 feet.

Wilbarger County

Atlantic Oil Producing Co.'s No. 6 Sigler Waggoner had an initial production of 892 bbls. at 2,658-81 feet. Davis Oil Corp.'s No. 5 Waggoner had an initial production of 452 bbls. at 2,644-74 feet. Empire Gas & Fuel Co.'s No. 28 Waggoner had an initial production of 135 bbls. at 2,266-93 feet. Martin and others' No. 1 George had an initial production of 140 bbls. at 2,214-24 feet. Piggs' No. 1 Nilner was dry and abandoned at 2,135 feet. Staley & Wynne's No. 7 Waggoner had an initial production of 118 bbls. at 2,376-90 feet. The Texas Company's No. 368 Waggoner was dry and abandoned at 2,288 feet and their No. 369 Waggoner was dry and abandoned at 1,150 feet.

RANGER DISTRICT COMPLETIONS

Week Ending December 28

Brown County

Hart Petroleum Co.'s No. 1 Scott was dry and abandoned at 1,880 ft. E. L. Smith's No. 14 George had an initial production of 50 bbls. of oil after having been shot with 10 quarts at 1,311-22 feet. Tylee and others' No. 1 Gaines was dry and abandoned after having an oil and water show at 1,362-75 feet. Mac Anderson's No. 1 Riordan had an initial production of 8 bbls. at 1,204-28 feet. Combs, Rogers and others' No. 1 Barnes made 2,500,000 feet of gas at 1,141-46 feet. Paramount Oil Royalties' No. 1 Guyer was dry and abandoned at 1,090 feet.

Callahan County

Kliner and others' No. 1 Miller was dry and abandoned at 1,072 feet.

Coleman County

Acrey Brothers' No. 1 Baker was dry and abandoned at 802 feet. Jamison and others' No. 1 Hutchings was dry and abandoned at 2,435 feet. Kidney, Kamon & Western Exploration Co.'s No. 1 Pfluger had an initial production of 37 bbls. oil and 10,000,000 feet of gas at 1,425-28 feet. Tidal Oil Co.'s No. 1 Stewardson had an initial production of 150 bbls. at 1,433-43 feet.

Eastland County

Gordon's No. 1 Clark was dry and abandoned at 1,655 feet.

Shackelford County

Grisham & Hunter's No. 5 Davis had an initial production of 10 bbls. after having been shot with 8 quarts at 1,636-43 feet. M. L. Hayes' No. 1 Casey had an initial production of 10 bbls. at 524-32 feet. Worth Petroleum Co.'s No. 1 Scott was dry and abandoned at 1,910 feet.

TEXAS PANHANDLE COMPLETIONS

Week ending December 28

Carson County

Skelly Oil Co.'s No. 21 Schaefer in Section 68, Block 4, location was abandoned. British American Oil Co.'s No. 2 Purviance, 330 feet north and east southwest corner of east 160 acres, Section 61, Block B-2, H.&G.N.R.R. Survey, location was temporarily abandoned.

Gray County

Herrogan Oil Co.'s No. 1 Bradford in Section 123, Block B-2, H.&G.N.R.R. Survey, made 20,000,000 feet of gas, gradually increasing from a depth of 2,-475-2,563 feet, encountered more gas in the granite wash at 2,680 feet and also a show of oil at 2,925 feet and was completed with 8,000,000 feet of gas at 3,-315 feet.

Motley County

The Exploration Co. of Texas' No. 5 Matador, located in the C Section 45, Block J, B.C.B.&C.N.G.R.R. Survey, was dry and abandoned at 3,975 feet.

Wheeler County

Martin & Debous' No. 2 Close, located in the C NE NE, Section 83, Block 23, H.&G.N.R.R. Survey, had an initial production of 60,000,000 feet of gas at 1,525-75 feet and was drilled to a total depth of 1,600 feet.

Important Decisions On New Mexican State And Government Lands

SANTA FE, N. Mex., Dec. 30.—A decision has just been handed down by Federal Judge Neblett for the United States District Court of New Mexico in the case of Ivan L. Skeen against Beulah V. Lynch and others. The decision was in favor of Buelah V. Lynch. This case is one in which Ivan L. Skeen was given a patent on certain federal government lands in Lea County, New Mexico, but the Government reserved the "coal and other minerals" as provided in the act of December 29, 1916. Beulah V. Lynch was given a permit on the land to prospect for oil and gas and later gave The Texas Company an operating agreement. The Texas Company drilled a well in Section 34-20-34 which came in for a producer for about 1,000 bbls. daily. Skeen, the surface owner, sued to cancel Lynch's permit and to retain the oil and gas rights. Skeen based his argument on the fact that the law did not specifically designate oil and gas and that therefore the oil and gas rights should have been given him with his homestead patent. The court held the phrasing, "other minerals," included oil and gas. This is a very important case as it will quiet dozens of other homesteaders who would have filed similar suits had it been adjudicated in favor of Skeen.

Another important court decision during the past week was District Judge Holloman's decision on Section 14 of the 1929 leasing law. He held that the land commissioner should give a new five-year lease when the old lease was relinquished, instead of a lease for the unexpired term of the old lease. Judge Holloman has reversed his opinion from statements made two weeks ago when he said a lease should be given for the unexpired term only.

ESSENTIAL POINTS IN USE OF GEOPHYSICS

(Continued from Page 68)

interpretation of the readings, will make him more careful as credit as well as discredit will be given to him for the results. But if we do this and gradually improve our instruments and knowledge then we soon will reach a point where geophysical methods will be of ever increasing value to geology and our oil industry.

JOHN LAMBING, PIONEER OIL AND GAS MAN, DEAD

John A. Lambing, 86, who had a leading part in developing early oil fields of western Pennsylvania, died Monday morning, December 30, in the home of a daughter, Mrs. Ray Smith, with whom he had been residing in Crafton, Pa., a suburb of Pittsburgh. Mr. Lambing, who was born in Manorville, Armstrong County, Pennsylvania, started work as a boy in the Oil Creek oil fields soon after Colonel Drake's discovery. With the outbreak of the Civil War he joined a Pennsylvania cavalry troop and served till the end of hostilities.

Following his discharge from military service, Mr. Lambing and his brother, James Lambing, formed a partnership as Lambing Brothers and the two became widely known for their aggressive wildcatting operations in the Parkers Landing, Petroleia, Karns City and Trautman Fields of Pennsylvania. In 1880, the partnership having been discontinued in the meantime, Mr. Lambing went to Bradford, Pa., and he operated in that field till 1886. Following this he entered the service of the Vandergrift interests and he supervised the laying of the first pipe line for gas from the Hickory Field in Washington County, Pennsylvania, to Wheeling, W. Va.

A year later, still in the employ of the Vandergrifts, Mr. Lambing superintended the laying of a gas line from the Cygnet, Ohio, field to Toledo, Ohio. After this he worked for the Vandergrifts for a short time in Detroit, Mich., and then went into the contracting business on his own account. Among the larger contracts which he handled in succeeding years were gas pipe line projects in Parkersburg and Wheeling, W. Va., and in Montreal, Canada. In these enterprises he had a financial interest in addition to that of contractor. In 1915 Mr. Lambing acquired some oil-producing properties in the neighborhood of New Castle, Pa., and as these demanded little of his personal attention he virtually retired from active participation in business.

In September, 1870, Mr. Lambing married Miss Dorcas McGivern, of Sharpsburg, Pa., the ceremony being performed by one of his two brothers who entered the Catholic priesthood, Rev. A. A. Lambing. He leaves six children, James and William Lambing, Mrs. Vin Doran, Mrs. Ray Smith and Mrs. Harry Bigley, all in the Pittsburgh district; and Mrs. Daniel McCarty, Elgin, Ill. He leaves also one brother and three sisters, Rev. M. A. Lambing, Scottdale, Pa.; Sister Idlephonse (Miss Kate Lambing), convent of the Order of Charity, and Mrs. Frank McCann, both of Greenburg, Pa., and Mrs. Robert McSherry, New Kensington, Pa.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 61)

CROCKETT COUNTY

California Co.'s No. 1 Shannon, Lease 3, 1,663 ft. N and 2,323 ft. W of SE cor., Sec. 42, T.C.R.R. Sur. ... Top salt 1,110 ft.; drlg. 2,405 ft.

Cushing Ref. & Gas Co.'s No. 3 Powell, 330 ft. from S and E of Sec. 53, Blk. BB, G.C.&S.F.R.R. Sur. ..... Top salt 1,030 ft.; total depth 2,250 ft.

Empire Gas & Fuel Co.'s No. 1 Shannon, 330 ft. from N and E of Sec. 42, T.C.R.R. Sur. ..... Top salt 1,130 ft.; drlg. 2,415 ft.

Lewis & Daniels' No. 1 Pecos River bed, 19 yds. S and 37° E of NW cor., Sec. 33, Blk. 1, I.&G.N. Sur. ..... Shut down 1,400 ft.

Magnolia Pet. Co.'s No. 1 Hoover, 2,310 ft. from N and 330 ft. from E of Sec. 12, Blk. 1, G.C.&S.F.R.R. Sur.. Rigging up.

T. P. Coal & Oil Co.'s No. 1 Shannon, 330 ft. from S and W of Sec. 44, T.C.R.R. Sur. ..... Top salt 1,060 ft.; drlg. 2,755 ft.

CULBERSON COUNTY

Grisham & Hunter Oil Corp.'s No. 1 fee, 330 ft. from S and W of Sec. 14, Blk. 59, T.&P. Sur. ..... Oil show 1,437 ft.; hole full salt water 2,612 ft.; drlg. 3,160 ft.

Grisham & Hunter Oil Corp.'s No. 1 Seay, 330 ft. from S and W of Sec. 16, Blk. 59, Twp. 7, T.&P.R.R. Sur. .. Hole full sulphur water 2,590 ft.; Total depth 3,021 ft.; underreaming 6-in. casing.

Grisham & Hunter Oil Corp.'s No. 3 Seay, 330 ft. from S line, 330 ft. from W line, Sec. 16, Blk. 59, Twp. 7 .. Underreaming 12½-in. casing 390 ft.; shut down 800 ft.

Hickey & Stiver's No. 1 C. O. Finley, 600 ft. N and 1,980 ft. W. Sec. 20, Blk. 82 ..... Small show oil 1,331 ft.; shut down 2,275 ft.; hole full water; elev. 3,874 ft.

West Coast Oil & Exploration Co.'s No. 1 McGregor, C NW, Sec. 14, Blk. 81 ..... Slight show oil 740 ft.; shut dowr 875 ft..

Scott & Dittman's No. 1 Miller, 1,160 ft. N and 2,480 ft. E, Sec. 1, Blk. 97, Public School Land ..... Rainbow 1,056 ft.; 300 ft. sulphur water 1,725 ft.; oil show 2,528 ft.; hole full sulphur water; running 6-in. casing; shut down 3,503 ft.

ECTOR COUNTY

Anderson's No. 1 fee, 1,320 ft. E along N line, Sec. 19, and 150 ft. N at right angles with line, Sec. 18, Blk. B-16, Public School Land ..... Moving in material.

Cosden Oil Co.'s No. 1-A University, 2,310 ft. from N, 440 ft. from E of Sec. 1, Blk. 35 ..... Drlg. 815 ft.

Cosden Oil Co.'s No. 1 University-B, 1,650 ft. S and 440 ft. W of NE cor. Sec. 2, Blk. 35 ..... Drlg. 1,475 ft.

Landreth Prod. Corp.'s No. 1-S University, 990 ft. S and 440 ft. W of NE cor. Sec. 2, Blk. 35 ..... Drlg. 2,375 ft.; top salt 1,080 ft.

Landreth Prod. Corp.'s No. 1-T University, 990 ft. N, 440 ft. E, Sec. 3, Blk. 35, University Land ..... Shut down 1,275 ft.

Llano Oil Co.'s No. 1 Midland, 330 ft. N and W of Sec. 18, Blk. 44, Twp. 3s, T.&P.R.R. Sur. ..... Rigging up.

Penn-Humble's No. 1 York, 330 ft. N, 2,640 ft. W, Sec. 16, Blk. 44, Twp. 3s, T.&P.R.R. Sur. ..... Top salt 1,240 ft.; top lime 3,275 ft.; show gas 3,333-35 ft.; cem. 6⅝-in. casing at 3,470 ft.

EL PASO COUNTY

Laytex's No. 1 Malone, 2,200 ft. SW and NW, Sec. 46, J. M. Day Sur. ..... Fishing tools 1,481 ft.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlow, Sec. 60, V-3, J. C. Clift Sur. ..... Shut down 3,000 ft.

FISHER COUNTY

Cranfill & Reynolds' No. 1 Bledsoe, 330 ft. N and E of SW SE, Sec 200, B.B.B.&C.R.R. Sur. ..... Hole full salt water 2,350-60 ft.; shut down 2,400 ft.

Magnolia Pet. Co.'s No. 1 Lee, Sec. 357, 2,310 ft. from N and 4,286 ft. from W ..... Total depth 3,308 ft.; cleaning out.

Roeser-Pendleton and Amerada's No. 1 First Nat'l Bank of Waco, 660 ft. N and 600 ft. W of SE cor. NE of Sec. 204, B.B.B.&C. Sur. ..... Show oil 3,108 ft.; shut down 3,158 ft.

GAINES COUNTY

Louisiana Oil & Ref. Co.'s No. 1 Ralph, 1,320 ft. from S and W of Sec. 7, Blk. A-28, Public School Land .. Shut down 1,680 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 6, H.&G.N. Sur. ..... Location.

Pandem Oil Corp.'s No. 1 Stokes, 2,310 ft. N and E of SW, Sec. 32, Blk. 5, G.H.&H.R.R. Sur. ..... Total depth 3,018 ft.; plugged back to shoot; show oil 2,908-18 ft.

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GLASSCOCK COUNTY

Amerada Pet. Corp.'s No. 1 Coffee, Sec. 22, Blk. 33, Twp. 2s, 990 ft. from N, 2,310 ft. from W ..... Standardizing 2,068 ft.

California Co.'s No. 3 Currie, 990 ft. S and 2,310 ft. W of NE cor., Sec. 219, Blk. 29, W.&N.W.R.R. Sur. .. Showing oil from 3,022-31 ft.; total depth 3,056 ft.

California Co.'s No. 1 Jones, 330 ft. S from N and E lines, Sec. 25, Blk. 33, Twp. 2s, T.&P. Sur. ..... Rig.

Timberlake & Snyder's No. 1 Meek, 2,310 ft. W and 1,600 ft. N of SE cor., Sec. 7, Blk. 34, Twp. 3s, T.&... Sur.. Show oil 970 ft.; cleaning out 1,147 ft.

Glasscock et al's No. 1 Edwards, 330 ft. from S, 1,650 ft. from E, Sec. 18, Blk. 33, Twp. 2s, T.&P.R.R. Sur... Cem. 6-in. casing 2,276 ft.; top oil sand 2,132 ft.; total depth 2,299 ft.; pumping 135 bbls. oil, 10 per cent water; may deepen.

Kirby Pet. Co.'s No. 3 Baker, Sec. 23, Blk. 33, Twp. 2s, 1,650 ft. from N, 330 ft. W ..... Running 12-in. casing; total depth 650 ft.

Lion Oil & Ref. Co.'s No. 3 Coffee, 990 ft. S and 330 ft. W of NE cor. Sec. 22, Blk. 33, Twp. 2s, T.&P.R.R. Sur. ..... Topped lime 2,053 ft.; setting pipe 2,068 ft.; shut down 2,071 ft.

Schermerhorn's No. 2 Kloh, 990 ft. from S and W, Sec. 13, Blk. 33, Twp. 2s, T.&P. Sur. ..... Location.

Simms Oil Co.'s No. 2 Coffee, Sec. 22, Blk. 33, Twp. 2s, 1,650 ft. from N, 330 ft. E ..... Drlg. 1,125 ft.

World Oil Co.'s No. 2-C McDowell, Sec. 21, Blk. 34, Twp. 2s, 330 ft. S and 2,310 ft. E of NW cor. ..... Hole full water 840-75 ft.; total depth 1,700 ft.; underreaming 8¼-in. casing.

HOWARD COUNTY

Continental Oil Co.'s No. 2 Clay, Lease 1, 330 ft. N and 990 ft. E of SW cor. Sec. 127, Blk. 29, W.&N.W.R.R. Sur. ..... Total depth 2,768 ft.

Continental Oil Co.'s No. 3-E Clay, 1,650 ft. N and 990 ft. W of SE cor., Sec. 138, Blk. 29, W.&N.W.R.R. Sur.. Top pay 1,762 ft.; shut down 1,793 ft.; shot 40 qts. from 1,762-90 ft.; cleaning out.

Continental Oil Co.'s No. 13 Clay-A, 1,980 ft. S and 200 ft. W of NE cor. of Sec. 139, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 1,750 ft.

Cosden Oil Co.'s No. 6 Roberts-A, 290 ft. N and E of SW cor, Sec. 129, Blk. 29, W.&N.W.R.R. Sur. ..... Shut down 1,456 ft.; sulphur water 1,433-46 ft.

Empire Gas & Fuel Co.'s No. 4 Clay, 330 ft. N and 2,310 ft. W of SE cor. Sec. 127, Blk. 29, W.&N.W.R.R. Sur. ..... Drlg. 920 ft.

Magnolia Pet. Co.'s No. 1 Snyder, 330 ft. from N and 990 ft. from W, Sec. 36, Blk. 30, Twp. 1s, T.&P. R.R. Sur. ..... Rigging up.

Merriwether's No. 1 Smith, 150 ft. from S, 2,490 ft. from W, Sec. 45, Blk. 33 ..... Rigging up standard tools at 1,540 ft.

Moody Oil Corp.'s No. 23-B Roberts, 990 ft. from N and W of Sec. 137, Blk. 29 ..... Total depth 261 ft.; set 10-in. casing.

Plymouth Oil Co.'s No. 4 Abrams, 330 ft. from N and 1,650 ft. from W, Sec. 5, Blk. 32, Twp. 2s ..... Top pay 2,480 ft.; shut down 2,519 ft.; plugged back 2,505 ft.; pumped 20 bbls., 15 per cent water, in 24 hrs.; may shoot.

Pure Oil Co.'s No. 3 Hooks, 2,440 ft. S, 1,036 ft. W, Sec. 140, Blk. 29, W.&N.W.R.R. Sur. ..... Spudding.

Schermerhorn Oil Co.'s No. 2 Kloh et al, 990 ft. from S and W of Sec. 13, Blk. 33, Twp. 2s, T.&P. Sur. ..... Drlg. 810 ft.

Simms Oil Co.'s No. 2 Clay, 330 ft. from S, 2,310 ft. from W, Sec. 127, Blk. 29 ..... Total depth 1,400 ft.; underreaming 8¼-in. casing.

Ward Oil Co.'s No. 21 Roberts, 2,310 ft. N and 990 ft. E of SW cor. of Sec. 137, Blk. 29, W.&N.W.R.R. Sur. .. Shut down 1,910 ft.

HUDSPETH COUNTY

California Co.'s No. 1 University, 3,821 ft. N and 2,554 ft. E of SW cor., Sec. 19, Blk. E ..... Top pay 2,851 ft.; drlg. 2,867 ft.

Western States Oil Co.'s No. 1 Moore, C SE, Sec. 16, Blk. 71, Twp. 6, T.&P. Sur. ..... Shut down 2,760 ft.

Western States Oil Co.'s No. 1 Gardner & Moseley, NE NW, Sec. 12, Blk. 18 ..... Shut down 3,140 ft.

IRION COUNTY

Beesley's No. 1 Sawyer Cattle Co., 1,320 ft. N and E of SW cor., Sec. 3,032, Blk. 24, H.&T.C.R.R. Sur. ..... Shut down 560 ft.

Crawford Oil Co.'s No. 1 Williams, 450 ft. from N, 150 ft. from W, Subd. 8 ..... Shut down 1,105 ft.

Carl Cromwell's No. 1 Tankersley, 2,490 ft. from S and E, Sec. 1,219, T.C.R.R. Sur. ..... Shut down 520 ft.

Cromwell et al's No. 1 Fuller, 2,134 ft. N and 631 ft. W of SE cor., Sec. 81, Blk. 1, H.&T.C.R.R. Sur. ..... Fishing 710 ft.; to skid rig.

Dennys & Andrews' No. 1 Tankersley, 2,660 ft. from W, 600 ft. from S of Sec. 4, H. N. Wallace Sur. ..... Skidded 25 ft. north; spudding 21 ft.

Kingwood Oil Co. et al's No. 1 J. D. Suggs, SE NW SE, Sec. 19, Blk. 7, H.&T.C. Sur. ..... Show gas 7,656 ft.; set 4½-in. casing 7,550 ft.; encountered 2,400 ft. sulphur water at 7,818 ft.; testing 7,670 ft.; plugged back with lead wool to 7,718 ft.; plugged back with cement to 7,668 ft.; to shoot show at 7,656 ft.

J. A. Starkweather's No. 1 Lindley, Sec. 1,160½, 900 ft. from S, 150 ft. from E, H.&T.C. Sur. on E ..... Shut down 1,475 ft.

P. H. Williams' No. 1 Ash, C of Sec. 20, Washington County ..... Shut down 5,300 ft.

JONES COUNTY

Continental Oil Co.'s No. 1 Phillips, 440 ft. from S and 330 ft. from E of Phillips 80-ac. tract, Sec. 16, Blk. 19, T.&P. Sur. ..... Shut down 600 ft.

Cosden-Herbert et al's No. 3 Bickley, 330 ft. N and W of SE cor. of S half NW, Sec. 50, Blk. 18 ..... Rig.

Cranfill & Reynolds' No. 1 Stevens, 990 ft. from N and 3,630 ft. from W of John McMullen Sur. 337 ..... Shut down 2,250 ft.

Mid-Tex Oil & Gas Co.'s No. 1 King ..... Shut down 1,520 ft.

Shabeen et al's No. 1 King ..... 800 ft. fluid in hole; cleaning out 2,066 ft.; top pay 2,061 ft.; 1,200 ft. oil in hole.

KENT COUNTY

California and Atlantic's No. 1 Wallace, 330 ft. from S and W, Sec. 60, Blk. G, W.&N.W.R.R. Sur. ..... Shut down 1,405 ft.

White & Smith's No. 1 Pursley estate, 1,320 ft. from E and 2,640 ft. from S of Sec. 8, Blk. H, H.&T.B. Sur.. Fishing 300 ft.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 700 ft. from N and W line of F. Lotta Sur. ..... Shut down 800 ft.

McLean & Jamison's No. 1 Cannon, 1,940 ft. N and 300 ft. W of SE cor. Robert Cochran Sur. ..... Shut down 1,350 ft.

LOVING COUNTY

Humble Oil & Ref. Co.'s No. 1 Kloh, 2,640 ft. N and W, Sec. 35, Blk. 55, Twp. 2, T.&P.R.R. Sur. ..... Fishing 3,750 ft.

Independent O. & G. Co.'s No. 1 Wheat, 330 ft. each way from W cor of Sec. 25, Blk. 1, W.&N.W. Sur. ..... Drlg. 3,940 ft.

Lockhart & Co.'s No. 2 fee, 676 ft. S, 330 ft. W, Sec. 91, Blk. 1, W.&N.W. Sur. ..... Rigging up standard tools.

LYNN COUNTY

Luse-well Oil Co.'s No. 1 May, 2,310 ft. S, 2,310 ft. W, Sec. 10, Blk. 7, E.L.&R.R. Sur. ..... Shut down 190 ft. for casing.

George McCamey's No. 1 Edwards, 165 ft. N and E, Sec. 5, Blk. 2, L.S.&W. Sur. ..... Top salt 2,140 ft.; oil show 1,580-90 ft.; hole full sulphur water 4,730 ft.; set 6-in. casing 4,733 ft.; shut down 5,040 ft.

MENARD COUNTY

Cromwell & Duffey's No. 2 Winslow, 250 ft. S and E of NW cor. NE of NE, Sec. 36, J. H. Gibson Sur. ..... Drlg. water well.

I. C. Barnett's No. 2 Callan, Sec. 1, 1,050 ft. from S, 1,190 ft. W ..... Est. 10-bbl. show oil from 1,132-52 ft.; 3,000,000 ft. gas from 1,267-68 ft.; may complete as a gasser.

MITCHELL COUNTY

California Co.'s No. 8 Foster, Lease 1, 1,100 ft. S and 990 ft. W NE cor., Sec. 6, Blk. 29, Twp. 1s, T.&P. R.R. Sur. ..... Total depth 1,670 ft.; underreaming 8¼-in. casing.

Gibson & Johnson's No. 2 Scott, 150 ft. N and 2,490 ft. W of SE cor., Sec. 7, Blk. 19, Lavaca Navigation Co. ..... Spudded and shut down 720 ft.

Morrison et al's No. 1 Morrison, Sec. 1, Blk. 29, Twp. 1n, 2,390 ft. from N, 660 ft. from E, T.&P.R.R. Sur. .... Rigging up.

Morrison et al's No. 2 Morrison, 2,390 ft. from N and 660 ft. from E of Sec. 31, Blk. 28, Twp. 1n, T.&P. R.R. Sur. ..... Rig.

Seiger's No. 1 Scott, C of NE of SW, Sec. 36, Blk. 17, S.P.R.R. Sur. ..... Shut down 730 ft.

Teas & Wheeler's No. 1 Radford, 1,320 ft. N and W of Sec. 1, Blk. 27, T.&P. Sur. ..... Drlg. 4,595 ft.

NOLAN COUNTY

Gibson & Johnson's No. 1 Bond, 1,320 ft. from N and 1,980 ft. from E of Sec. 42, Blk. 20, T.&P. Sur. ..... Drlg. 2,855 ft.

Phillips Pet. Co.'s No. 1 Plunkett, 330 ft. N and W of SE cor. NW, Sec. 66, Blk. 22, T.&P. Sur. ..... Shut down 4,465 ft.

PECOS COUNTY

Amerada Pet. Corp.'s No. 1 University, 990 ft. from S, 2,310 ft. W, Sec. 13, Blk. 18, University Land ..... Shut down 869 ft.

Arkansas Fuel Oil Co.'s No. 1-A University, 1,650 ft. from S and W of Sec. 32, Blk. 16 ..... Shut down 935 ft.; good for 1,000,000 ft. gas in sand; to recement casing to shut off water.

Artec Oil Co.'s No. 1 Gaddard, C of Sec. 19, Blk. 11, H.&G.N. Sur. ..... Location.

E. W. Bateman's No. 1 Cunningham, 330 ft. from S and W line of NE, Sec. 34, Blk. 11 ..... Shut down 1,395 ft.

Black & Dittman's No. 1 Pecos Valley, 160 ft. from SW and SE lines, Sec. 34, Blk. 3, H.&T.C.R.R. Sur. ..... Drlg. 350 ft.

Buell & Hagan's No. 1 Byrne, 990 ft. from N and 2,310 ft. from E of Sec. 54, Blk. 10, H.&G.N.R.R. Sur. .... Shut down 1,392 ft.; show gas 1,325 ft.; show oil 1,325-49 ft.

California Co.'s No. 6 Smith, Lease No. 1, 1,700 ft. N and 330 ft W of SE cor., Sec. 37, Blk. 194, G.C. &S.F.R.R. Sur. ..... Drlg. 310 ft.

California Co.'s No. 2 Tippett, 2,016 ft. from S and 1,040 ft. from E of Sec. 2, D. F. Robertson Sur. ..... Temporarily abandoned.

Cardinal Oil Co.'s No. 1 Tippett, 330 ft. N and W of SE cor., Sec. 36, Blk. 12, H.&G.N.R.R. Sur. ..... Shut down 515 ft.

Cardinal Oil Co.'s No. 1 Sun-Tippett, Sec. 1, 165 ft. from S, 150 ft. W, J. T. Robertson ..... Shut down 365 ft.

Cardinal Oil Co.'s No. 1 Tidal-Tippett, 825 ft. N, 495 ft. E, Sec. 40, Blk. 194, T.C.&S.F.R.R. Sur. ..... Shut down 385 ft.

Continental Oil Co.'s No. 2 University, 330 ft. S and 1,680 ft. E of NW cor. of Sec. 6, Blk. 17, University Land ..... Hole full water 1,460 ft.; total depth 1,600 ft.

Continental Oil Co.'s No. 3 University, 330 ft. S and 2,371 ft. E of NW cor. Sec. 6, Blk. 17, University Land ..... Pumped 57 bbls. at total depth 1,285 ft.; top pay 990 ft.

Continental Oil Co.'s No. 6 University, 330 ft. S and 3,031 ft. E of NW cor. of Sec. 6, Blk. 17, University Land ..... Cellar.

E. W. Bateman et al's No. 1 Cordova, 3,490 ft. from N and 1,515 ft. from W, Sec. 29, Blk. 11, H.&G.N.R.R. Sur. ..... Shut down 1,725 ft.

Crosby Prod. & Royalty's No. 3 Smith, 330 ft. from S and W line, Sec. 24, Blk. 194 ..... Shut down 718 ft.

Cosden Oil Co.'s No. 1 McDonald, 350 ft. from N and E of Sec. 1, H.E.&W.T. Sur. ..... Drlg. 1,685 ft.

Cranfill & Reynolds' No. 1 Masterson, SW cor. Sec. 104, Blk. 10 ..... Top pay at 1,249 ft.; second pay 1,268 ft.; 18½ bbls. oil; deepened to 1,450 ft. without increase; total depth 1,495 ft.; pumping 30 bbls. daily.

Dixie Oil Co.'s No. 1 McKinzie, 3,300 ft. from N and 2,025 ft. from W of Sec. 15, Blk. 604, G.C.&S.F. ..... Shut down.

Freeman et al's No. 1 Pecos Valley, 150 ft. from NW and SW of NE half of S, Sec. 36, Blk. 3, H.&T.C. Sur. ..... Drlg. 1,200 ft.

A. M. Griffith's No. 1 Ferrenbach et al, 2,112 ft. from W line, 1,320 ft. from S line, Sec. 9, Blk. 603, G.C.&S.F. Sur. ..... Running 10-in. casing 60 ft.

Geyer-Frates' No. 1 White-Baker, 2,310 ft. from N and E line of Sec. 29, Blk. Z, T.C.R.R. Sur. ..... Location.

Harrison & Cromwell's No. 1 White-Baker, 2,310 ft. from S and E, Sec. 42, Blk. 11, H.&G.N.R.R. Sur. .... Oil show 822-27 ft.; fishing 1,615 ft.

Hussman Oil Co.'s No. 1 Esters, 960 ft. from N and 300 ft. E, Sec. 83, Blk. OW, T.M.R.R. Sur. ..... Bad hole at 81 ft.

Independent O. & G. Co.'s No. 1 Phelps, 150 ft. N and W of N half of NE, Sec. 26, Blk. 11, H.&G.N.R.R. Sur ..... Shut down 1,885 ft.

J. L. Kennedy's No. 1 Roberts, C of Sec. 78, Blk. 3, T.&P.R.R. Sur. ..... Drlg. 2,480 ft.

Sam Kitts et al's No. 1 Sherbino, 330 ft. from N and 990 ft. from W line, Sec. 52, Blk. C-4, G.C.&S.F.R.R. Sur. ..... Top salt 976 ft.; shut down 2,490 ft.

Kirby Pet. Co.'s No. 1 Stockton Cattle Co., 330 ft. from N and E, Sec. 2, T.C.R.R. Sur. ..... Shut down 490 ft.

Landreth Prod. Corp.'s No. 1-A University, 1,980 ft. from S line, 660 ft. from E line, Sec. 13, Blk. 18..... Completed Sept. 6 with 66,485,000 ft. gas from 950-52 ft.; drlg. 1,450 ft.

Landreth Prod. Corp.'s No. 1 Smithpeter, 330 ft. from S and 280 ft. from E line, Sec. 31, Blk. 11, H.& G.N.R.R. Sur. ..... Oil show 2,269-94 ft.; 100,000 ft. gas; total depth 2,335 ft.; hit 2,000 ft. sulphur water from 2,286-91 ft.

Landreth Prod. and Henshaw Bros.' No. 1-E University, 330 ft. N and W of SE cor. W half NE, Sec. 13, Blk. 18, University Land ..... Shut down 940 ft.

Landreth Prod. and Henshaw Bros.' No. 2-E University, 330 ft. S and E of NW cor. of W half of NE, Sec. 13, Blk. 18, University Land ..... Drlg. 845 ft.

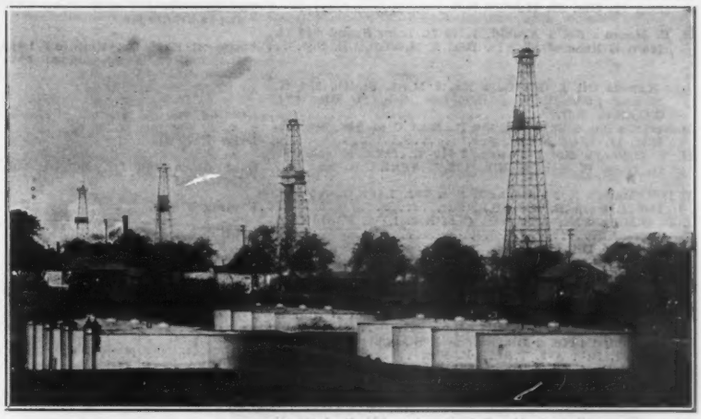
Landreth Prod. Corp. et al's No. 1-I University, 330 ft. from S and W of NE of NE, Sec. 24, Blk. 18 ..... Set 10-in. casing; shut down 1,095 ft.; 2 bbls. oil hourly 960 ft.

Landreth Prod. and Henshaw Bros.' No. 3-F University, 330 ft. from N and E lines of SW Sec. 3, Blk. 16, University Land ..... Location.

Landreth Prod. and Henshaw Bros.' No. 2-I University, 330 ft. S and W of NE, Sec. 24, Blk. 18, University Land ..... Cellar.

Mauch & Kroger's No. 1 Holmes, Sec. 5, Blk. 178, T.C. Sur. ..... Shut down 1,510 ft.

Mazda Oil Co.'s No. 1 Cordova Union Land Co., 2,310 ft. from N and 990 ft. from E of Sec. 103, Blk. 11, H.&G.N. Sur. ..... Shut down 980 ft.



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MALONEY

MALONEY

Merrick-Bristow's No. 1 Neville, 330 ft. from S and W, Sec. 42, Blk. 12, H.&G.N.R.R. Sur. ... Top salt 645 ft.; shut down 1,670 ft.; will deepen.

R. E. Moore's No. 1 Arnold, 1,320 ft. from S and 660 ft. from E lines of Sec. 18, Blk. 1, H.&T.C.R.R. Sur. ... Show oil 1,216 ft.; show oil 1,408 ft.; pulling 8-in. casing; shut down 1,615 ft.

Mid-Kansas Oil & Gas Co.'s No. 8 M. A. Smith, 250 ft. N and 1,005 ft. W of NE cor., Sec. 21, Blk. 194, G.C.&S.F. Sur. ... Rigging up.

Moncrief's No. 1 Sullivan, 150 ft. E of C of SW, Sec. 58, Blk. 11, H.&G.N.R.R. Sur. ... Drlg. 1,177 ft.

H. T. O'Neal's No. 1 Power, 2,640 ft. from N and 150 ft. from W, Sec. 1, Blk. 132, T.&St.L.R.R. Sur. ... Shut down 200 ft.; moved material off.

J. D. O'Mara's No. 1 Bennett, Sec. 592, 1,460 ft. from S, 150 ft. from E, G.C.&S.F. Sur. ... Fishing 875 ft.

J. D. O'Mara's No. 1 Streety, C of Sec. 1, W. P. Howard Sur. ... Shut down 1,625 ft.

Pecos Crude Oil Pur. Co.'s No. 4 Pecos Valley, 770 ft. from SW and 1,320 ft. from SE of W, Sec. 22, Blk. 10, H.&G.N.R.R. Sur. ... Rigged up and shut down.

M. M. Rowan's No. 1 University, NE, Sec. 25, Blk. 16 ... Total depth 2,490 ft.; shut down; plugging back.

Shell Pet. Corp.'s No. 1 Percival, 330 ft. from N and E of SE, Sec. 199, Blk. 3, I.&G.N. Sur. ... Location.

Sides & Cloyd's No. 2 Blackstone & Slaughter, C NW of Sec. 34, Blk. A-2, T.&C.R.R. Sur. ... Shut down 362 ft.

Skelly Oil Co.'s No. 1 Bowers, SW cor. N half SE, Sec. 31, Blk. 16 ... Initial production 58 bbls. 1,649-50 ft.; total depth 1,671 ft.; to recement casing.

Taylor-Link Oil Co.'s No. 6 University, 330 ft. from N and 330 ft. from E of W half of SE, Sec. 13, Blk. 18.. Shut down 1,620 ft.; top pay 1,560 ft.; spraying 20 bbls. day and 12,000,000 ft. gas.

Taylor-Link Oil Co.'s No. 9 University, 990 ft. N and 2,310 ft. W of SE, Sec. 31, Blk. 16, University Land.. Show oil and show gas 1,340-45 ft.; shut down 1,670 ft.; top pay 1,665 ft.; 1,000 ft. fluid in hole.

The Texas Company's No. 1 Graef, 4,758 ft. from W and 908 ft. from S of Sec. 44½, Blk. 12, H.&G.N. Sur. ... Drlg. 1,200 ft.

Transcontinental and Arkansas Nat'l Gas Co.'s No. 1 Matthews, 330 ft. from S, 1,060 ft. from E, Sec. 10, Blk. 194 ... Shut down 710 ft.

Trees Oil Co.'s No. 3 Trees, 330 ft. from S and W of Sec. 90, Blk. 8, H.&G.N. Sur. ... Rigging up.

World Oil Co.'s No. 2 University, Sec. 31, Blk. 16, 330 ft. from N, 2,310 ft. E ... 500,000 ft. gas 1,225-40 ft.; drlg. 1,559 ft.; show gas 1,540 ft.

World Oil Co.'s No. 1-C University, 1,650 ft. from N, 990 ft. W, Sec. 7, Blk. 20, University Land ... Ready to spud.

PRESIDIO COUNTY

Eastland Oil Co.'s No. 1 Tootle, C Sec. 17, Blk. 1, D.P. R.R. Sur. ... Spudded; shut down.

T. P. Coal & Oil Co.'s No. 1 Bogel, 330 ft. S and W, Sec. 83, Blk. 8, G.H.&S.A. Sur. ... Gas show 2,810 ft.; drlg. 3,940 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 1-C University, 2,598 ft. S and 250 ft. W of NE cor., Sec. 1, Blk. 2, University Land.. Top pay 2,903 ft.; 1,000 ft. fluid in hole; top pay 6,807 ft.; shut down 8,000 ft.

Big Lake Oil Co.'s No. 4-C University, 1,120 ft. from N and 1,096 ft. from E of Sec. 1, Blk. 2 ... Showing oil and gas at 8,220 ft.; total depth 8,220 ft.; flowed an average of 207 bbls. for last 7 days.

Texon Oil & Land Co.'s No. 2-B University, 4,655 ft. from S, 250 ft. from W, Sec. 36, Blk. 9 ... Total depth 3,026 ft.; to run casing.

Texon Oil & Land Co.'s No. 3-B University, 2,240 ft. from S, 920 ft. from W, Sec. 36, Blk. 9 ... Fishing 2,990 ft.

Thomas & Brann et al's No. 1 Hughes, C NE of Sec. 7, Blk. 1, T.C.R.R. Sur. ... Top salt 1,085 ft.; shut down 3,800 ft.

REEVES COUNTY

Exploration Co.'s No. 1 A. A. Kinney, 1,500 ft. W of NE cor. Sec. 26, Blk. C-18, Public School Land, elev. 2,847 ft. ... Shut down 2,990 ft.

H. T. Hansford's No. 1 Williams, 150 ft. from S and W, Sec. 17, Blk. 6, H.&G.N. Sur. ... Drlg. 380 ft.

Black & Fink's No. 1 Brooks, 1,980 ft. N and 660 ft. W, Sec. 16, Blk. 59 ... Shut down 605 ft.

Southern Crude Oil Pur. Co.'s No. 1 Kioh-Rumsey, 2,310 ft. N and W SE cor., Sec. 23, Blk. 51 ... Show oil 5,191 ft.; drlg. 5,195 ft.

David R. Thompson's No. 1 A. A. Eddins, Sec. 9, Blk. C-1 ... Fishing 5,658 ft.

RUNNELS COUNTY

Gibson & Johnson's No. 1 Johnson, 2,310 ft. N and 1,650 ft. W of SE cor., Sec. 150, E.T.R.R. Sur. ... Spudding.

Gibson & Johnson's No. 2 Serratt, 2,310 ft. from S and 1,650 ft. from E of Sec. 150, E.T.R.R. Sur. ... Derrick.

Gibson & Johnson's No. 1 Woods, Sec. 529, 2,600 ft. from S and 300 ft. from E. T. T. Williams Sur. ... Drlg. 3,405 ft.

H. E. Lamar's No. 1 Long, 2,310 ft. N, 6,900 ft. E, Sec. 262 ... Shut down 1,375 ft.

McLean's No. 1 Clayton, 150 ft. from N line, 270 ft. from W line of Sec. 133 ... Shut down 1,185 ft.

Vacuum Oil Co.'s No. 4 McMillan, 555 ft. S and 717 ft. W of NE cor., Lot 22, Domingo Diaz Sur. No. 532... Location.

SCHLEICHER COUNTY

Delmar Oil Co.'s No. 1 O'Harrow, C of NW, Sec. 56, Blk. I, G.H.&S.A.R.R. Sur. ... Spudded and shut down.

Interstate's No. 1 Whitten, 1,320 ft. from N and W, Sec. 35, Blk. LL, T.C.R.R. Sur. ... Shut down 5,600 ft.

George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,470 ft. from W, G.H.&S.A.R.R. Sur. ... Shut down 1,020 ft.

SCURRY COUNTY

Byrd & Harmon's No. 1 Murphy, Jr., 330 ft. from N and E of Sec. 114, Blk. 97, H.&T.C. Sur. ... Shut down 1,732 ft.

Camp Spring Oil & Ref. Co.'s No. 3 Guinn, 1,300 ft. from S, 300 ft. from E, Sec. 12, Blk. 3, H.&T.C.R.R. Sur. ... Drlg. 3,520 ft.

Cottingham & Briscoe's No. 1 Trees, C SE Sec. 147, Blk. 97 ... Sulphur water 3,390 ft., total depth.

I. B. Mimms et al's No. 1 J. J. Koonsman, Sec. 216, Blk. 2, H.&T.C. Sur. ... Spudded and shut down 300 ft.

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. ... Shut down 4,325 ft. for 5-in. casing.

E. L. Smith Oil Co.'s No. 1 Moore, 1,320 ft. from S and W, Sec. 379, Blk. 97 ... Top salt 750 ft.; encountered 500,000 ft. gas 1,510 ft. Shut down 2,005 ft.

STERLING COUNTY

Sherwood B. Owen's No. 1 Tweedle, 1,980 ft. from N and 1,320 ft. from E of Sec. 10, Blk. T, T.&P. Sur. ... Shut down 1,935 ft.

SUTTON COUNTY

Independent Oil & Gas Co.'s No. 1 Willson, Sec. 30, Blk. A, 1,650 ft. from N, 2,310 ft. from W ... Rig.

Independent and Sun Oil Co.'s No. 1 Allison, Sec. 39, Blk. A, 200 ft. from N and 1,000 ft. from W ... Drlg. 4,156 ft.

TAYLOR COUNTY

Adams et al's No. 1 Lowe, 150 ft. from N and W of Sec. 19, League 120, Guadalupe Sur. ... Top pay 2,383 ft.; shut down 2,384 ft.; 2,000 ft. oil in hole.; made 1 small head.

Condor Pet. Co.'s No. 1 Allen, C of NW, Sec. 220, Blk. 64, H.T.C.R.R. Sur. ... Location.

John B. Jameson's No. 1 Webb, 1,170 ft. S and W of NE cor., Sec. 46, Lunatic Asylum Land ... Show oil 4,917 ft.; shut down 5,105 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW, Sec. 155, Blk. D, M.-K.-T.R.R. Sur. ... Shut down 1,150 ft.

Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. ... Shut down 3,000 ft.

Mrs. J. B. McPhee's No. 1 Sam Belt, C, Sec. 78, Blk. D-7, E.L.R.R. Sur. ... Shut down 880 ft.

Transcontinental Oil Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S, Sec. 26, Blk. 161, G.C.&S.F.R.R. Sur. ... Shut down 820 ft.

Woodley & Jones' No. 1 Pankenham, C SE NW, Sec. 43, Blk. B-2, C.C.S.D.&N.G.R.R. Sur. ... Shut down 625 ft.

TERRY COUNTY

Kingsland Oil Prod. Co's No. 1 Brownfield, C NW SW SW, Sec. 7, Blk. 1-A, E.L.R.R. Sur. ... Fishing baller 5,080 ft.

TOM GREEN COUNTY

Cannon et al's No. 1 Rust, 990 ft. S, 990 ft. W of NE cor. of Sec. 745 ... Rig.

Ellis et al's No. 1 Lewis, 450 ft. S and 150 ft. E of SE cor. of J. W. Sur. in Albert Black Sur., Sec. 75 ... Shut down 300 ft.

Fitzgerald & Taliaferro's No. 1 Bennett, C SW, Sec. 1,628, E. H. Ringer ... Shut down 2,480 ft.

Fuhrman Pet. Co.'s No. 1 Wardlaw, 2,650 ft. from N and E of Sec. 6, Blk. 17, H.&T.C. Sur. ... Shut down 1,125 ft.

E. W. Wiley et al's No. 1 Maier, 200 ft. from E, 110 ft. from N, Sec. 6, Blind Asylum Land ... Shut down 200 ft.

UPTON COUNTY

Gulf Prod. Co.'s No. 3-B Hughes, 160 ft. N and 161 ft. W of most southerly SE cor. of their 200-ac. lease "B" out of Wm Teer Sur. ... Rig.

Pure Oil Co.'s No. 3 Hughes, 150 ft. S and 767 ft. E of NW of their 300 ac., Sec. 4, Wm. Teer Sur. ... Shut down 650 ft.

Pure Oil Co.'s No. 4 Hughes, Sec. 4, 330 ft. S and E SW cor., Snowden & McSweeney lease ... Shut down 253 ft.

Snowden & McSweeney's No. 3 Hughes, 330 ft. from S and W of 80-ac. lease, Sec. 4, Wm. Teer Sur. ... Rigging up; shut down.

T. P. Coal & Oil Co.'s No. 14-A Lane, 990 ft. N and 2,310 ft. W SE cor., Sec. 5, G.C.&S.F. Sur. ... Drlg. 1,700 ft.

Texon and Continental's No. 2 Sherk, 430 ft. from N line, 330 ft. from W line, Sec. 35, Blk. 1 ... Drlg. 1,875 ft.

T. P. Coal & Oil Co.'s No. 1-D Lane, 430 ft. from S, 330 ft. W, Sec. 36, Blk. 1 ... Drlg. 400 ft.

T. P. Coal & Oil Co.'s No. 1 Reese, 330 ft. from N and E line, Sec. 2, Blk. 3 ... Building rig.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE, Sec. 30, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. ... Shut down 4,850 ft.

O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. ... Gas sand 2,491-2,520 ft.; tested 125,700 ft. gas; reset 8-in. 2,511 ft.; reaming; shut down 5,443 ft.

Phantom Oil Co.'s No. 1 Ingram, 175 ft. W of E line and 300 ft. N of S line, Sec. 44, Blk. D-8, E.L.&R.R. Sur... Show oil 1,535 ft.; underreaming 12-in. casing 1,593 ft.

Valvert Oil Corp.'s No. 1 Bassett, C NE, Sec. 47, Blk. Y.. Shut down 4,009 ft.

WARD COUNTY

Alpine Oil & Gas Co.'s No. 1 Dakan, 228 ft. from NE and 150 ft. from SE line, Tract 8, Sec. 11, Blk. 5, H.&T.C. Sur. ... Drlg. 150 ft.

E. J. Anderson's No. 1 Johnson, 150 ft. N, 346 ft. E, Sec. 7, Blk. 32, H.&T.C.R.R. Sur. ... Drlg. 635 ft.

Atlantic et al's No. 1 Dorr, 1,730 ft. S, 990 ft. W, Sec. 2, J. Howe Sur. ... Shut down 1,160 ft.

Atlantic and Delmar's No. 6 Hayzlett, 2,490 ft. from NE and NW lines, Sec. 17, H.&T.C. Sur. ... Top salt 1,140 ft.; cleaning out at 2,512 ft.; top pay 2,508 ft.

Atlantic and Delmar's No. 7 Hayzlett, 1,650 ft. from NE and NW of Sec. 17, Blk. 5 ... Location.

Fugler et al's No. 1 Grand Falls townsite, 185 ft. SE of NW line and 500 ft. NE of NE, Sec. 7, Blk. 32, H.&T.C. Sur., located Sec. 11, Blk. 5, H.&T.C. Sur. ... Drlg. 865 ft.

Grand Falls Oil Co.'s No. 1 Boogher-Holden, 2,598 ft. S, 4,026 ft. E, Sec. 11, Blk. 5, H.&T.C.R.R. Sur. ... Shut down 800 ft.

Gulf Prod. Co.'s No. 3 Hutchins, 2,310 ft. from N and 330 ft. from W, Sec. 1, Blk. F, G.M.M.B.&A. Sur. ... Top salt 1,035 ft.; drlg. 1,500 ft.

Gulf Prod. Co.'s No. 7 O'Brien, 330 ft. S and W, Sec. 22, Blk. F, G.M.M.B.&A. Sur. ... Drlg. 2,950 ft.; 2,000 ft. fluid in hole, 1 bbl. of water.; no increase in oil.

Gulf Prod Co.'s No. 3 Wristen Bros., 220 ft. NE of SW and 220 ft. SE of NW, Sec. 18, Blk. 5, H.&T.C. Sur. .. Show gas 1,960-70 ft.; filling up with sulphur water 2,520-27 ft.; shut down 3,000 ft. salt water at 2,545 ft.

F. E. E. et al's No. 1 Wristen, 990 ft. from S and W lines of Sec. 26, Blk. B-28 ... Top salt 700 ft.; shut down 2,675

E. B. Lovelace et al's No. 1 Redman, 1,980 ft. NE of SW line and 1,980 ft. SE of NW line, Sec. 162, Blk. 34, H.&T.C.R.R. Sur. ... Underreaming 10-in. casing; water 1,245 ft.; drlg. 2,840 ft.; show gas 2,806-09 ft.

Mid-Continental's No. 1 Conway, 2,316 ft. E, 922 ft. S, Sec. 23, Blk. 29, Public School Land ... Shut down 800 ft.

Penn and Atlantic's No. 2 Bennett, 2,310 ft. S line, 1,650 ft. W line, Sec. 16, Blk. 34, H.&T.C.R.R. Sur. ... Drlg. 1,070 ft.

Penn and Atlantic's No. 1 Cooper, 330 ft. from NE and 990 ft. from NW of Sec. 43, Blk. 34, H.&T.C. Sur. ... Drlg. 995 ft.

Shell Pet. Corp.'s No. 1 Owens, located NE cor. of Sec. 16, Blk. 5, H.&T.C.R.R. Sur. ... Shut down 3,074 ft.; top pay 2,886-93 ft.; increase at 2,909 ft. and 3,023-32 ft.; shot 90 quarts from 2,473-93 ft.; 2,400 ft. fluid, ⅛ bbl. water hourly.

Shipley et al's No. 4 Hayzlett, 2,050 ft. NW of SE and 2,420 ft. NE of SW line of Sec. 17, Blk. 5, H.&T.C. R.R. Sur. ... Top salt 720 ft.; shut down 2,546 ft.; plugged back 2,538 ft.

Shipley et al's No. 5 Hayzlett, assume common line Secs. 16 and 17 is N and S, 220 ft. S and 1,910 ft. W, Sec. 17, Blk. 5 ... Rig.

Shipley et al's No. 1 Monroe, 330 ft. SE SW, Sec. 3, Blk. 1 ... Shut down 250 ft.

Sun Oil Co.'s No. 2 Sealy, 330 ft. from N and E of Sec. 88, Blk. F, G.M.M.B.&A. Sur. ... To underream 10-in. casing; total depth 1,155 ft.

WINKLER COUNTY

V. T. Bolin's No. 2 Brown et al, 2,000 ft. S and W of NE, Sec. 4, Blk. B-5, Public School Land ... Top salt 1,300 ft.; shut down 2,832 ft.

Bashara et al's No. 2 Bashara, 990 ft. from S, 2,310 ft. from E, Sec. 17, Blk. B-3, Public School Land ... Top brown lime 2,306 ft.; shut down 2,545 ft.

Cinderella Syndicate's No. 1 Hendricks, 330 ft. N, 1,650 ft. W, Sec. 42, Blk. 26, Public School Land ... Total depth 150 ft.; rig.

Humble Oil & Ref. Co.'s No. 2 Walton, 2,310 ft. from N and W of Sec. 47, Blk. 26 ... Top lime 2,263 ft.; top salt 960 ft.; cem. 10-in. casing 2,270 ft.; shut down 2,550 ft.

Liner Drlg. Co.'s No. 1 Campbell, 330 ft. from N and E cor., Sec. 2, Blk. B-5 ... Top brown lime 2,510 ft.; shut down 3,685 ft.

Sun Oil Co.'s No. 1 Sealy, 2,310 ft. N line, 330 ft. from W line, Sec. 52, Blk. F, C.M.M.B.&A. Sur. ... Drlg. 730 ft.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 52)

F. P. Zoch's No. 1 Steinman, John Garelli Sur., 976 ft. from SW line, 1,797 ft. from NW line.....Rigged up and ready.
H. T. Roe's No. 1 Leinhardt.....T. D. 1,750 ft.; shut down after testing sand at this depth.

DIMMIT COUNTY

Texas Fuel Gas Co.'s No. 1 City Nat'l Bank (Laxon).....Setting csg. at 680 ft.
Texas Fuel Gas Co.'s No. 1 Laxon, Sur. 653, 5 miles SW Carrizo Springs.....T. D. 1,425 ft.; setting csg.; test has shown some gas and rainbows of oil.

DUVAL COUNTY

National Oil Co.'s No. 2 Ball, Agua Poquita Sur., Blk. 3..Drlg. 1,570 ft.
F. P. Zoch's No. 1 King, Blk. 25, Howman Smith Subd., W. R. King ranch, Dugo Hinijosa grant, 660 ft. N line, 660 ft. E line.....Location.
Southern Oil Co.'s No. 1 Welder Wood, Sur. 215.....T. D. 750 ft.; standing, waiting on water.

EDWARDS COUNTY

A. M. Griffith's No. 1 Wardlaw.....Shut down 3,000 ft. awaiting orders; expect to drill deeper.

FRIO COUNTY

Frank B. LeFeure's No. 1 H. W. and R. L. Eschenburg, Edward Gallagher Sur. No. 789, 3,980 ft. W of SE cor. of Edward Gallagher Sur. No. 788 and 1,320 ft. S of N line of Edward Gallagher Sur. No. 789.....Location.

GOLIAD COUNTY

Compton Oil Co.'s No. 1 Fromme, Dexter Sur.....Standing.
F. P. Zoch's No. 1 Kaufman.....T. D. 4,232 ft.; completed; set 4½-in. csg. at 4,216 ft.; 14 ft. dry gas sand; dry gas well of 40,000,000 ft.; 1,640 lbs. rock pressure in 18 minutes; 625 lbs. working pressure through three-quarter-inch choke; 400 lbs. working pressure five-eighths and three quarters-inch choke; 750 lbs. working pressure, five-eighths-inch choke; no water or oil; odor of gasoline; set one joint of three blank joints and one joint of three screen three-eighths-inch perforation.
Humble Oil & Refining Co.'s No. A-2 M. C. Spangle, in the H.&G.N.R.R. Sur., 2,000 ft. N. 20 degrees W of No. A-1 M. C. Spangle, 6 miles N of Goliad.....T. D. 707 ft.; sand; no showing.
Union Prod. Co.'s No. 1 Lucas, Juan Moya Delgado Sur.....Drlg. shale 2,928 ft.

GONZALES COUNTY

Acme Oil & Royalty Corp.'s No. 1 Weber, Thomas Wright Sur.....Drlg. 1,695 ft. in sandy shale.
Dunning & Pierce's No. 1 Stahl, Sarah Hendricks Sur., 150 ft. to SE and NE lines of farms.....Dropped till drilling starts.
Adams & Lyles' No. 1 Jackson Sur.....Spudded in and shut down; depth corrected.
Linderman Brothers' No. 2 F. H. Frampton, in Richard Heath Sur.....Derrick.
Finnell & Elam's No. 1 Robinson, Liverpool Sur.....Dropped from reports until work is resumed.
Hoffman et al's No. 1 Borrer, J. Stewart Sur.....Dropped from reports until work is resumed.
Marshall & Moore's No. 1 St. Clair, R. H. Wymn Sur.....Dropped from reports until work is resumed.
United North & South's No. 1 J. A. Kerr, in James Bowman Sur., 150 ft. S of CNL of tract, 11 miles W from Waelder.....Drlg. in shale 3,128 ft.
United North & South Dev. Co.'s No. 1 J. E. Preston 120 acres, John Oetkins Sur., 1,350 ft. to S line, 750 ft. of W line.....T. D. 3,475 ft.; drlg. in shale.
L. L. Jones's No. 1 J. F. Kindred, W. W. Barnes Sur., 700 ft. W line, 1,000 ft. S line.....Dropped till drilling starts.
Cullen & West's No. 1 E. Menking, Blk. 24, 150 ft. to N and 450 ft. to E line of Blk. 24, 14,050 ft. to NW and NE line of Sur.....Drlg. in shale 2,312 ft.
A. G. Keiffer's No. 1 B. B. Dix.....Drlg. in Taylor marl 2,800 ft.; drill stem stuck.

GUADALUPE COUNTY

Shell Petroleum Corp.'s No. 1 Denmann, Jose de la Baume Sur.....Drlg. in sandy shale at 3,134 ft.; make test for crooked hole.
O. W. Killam's No. 1 C. N. Adams, Josias Randolph Sur., 150 ft. to NW and NE lines of farm.....T. D. 2,327 ft.; abandoned.
J. O. Dore's No. 1 Appling, H. Cottlebur.....Dropped from reports until work is resumed.
Grayburg Oil Co.'s No. 1 Wells, Jose La Baume.....T. D. 3,902 ft.; drilled plug and bailed dry; bottom of hole 7 ft. in Edwards.
Pagenkopf & Kennon's No. 1 Halm, Joseph Kent Sur., 5 miles E of Seguin.....T. D. 1,960 ft. in Edwards limestone.
Adams-Lyles-Walton's No. 1 Zoberoski, in James D. Clements Sur.....Bailing 15 bbls. oil per day from 2,485 ft.; top of Eagleford.

HAYS COUNTY

E. A. Bucklin's No. 1 A. Elsner.....T. D. 725 ft.; shut down.
John H. Foster, trustee's No. 1 W. G. Barber, 7 miles SE from Buda.....T. D. 671 ft.; topped Edwards with show of oil; stdg.

JACKSON COUNTY

Wright Brothers' No. 7 Drushell.....Standing 3,875 ft.

JIM HOGG COUNTY

Deep Rock Oil Co.'s No. 1 Kelsey.....Standing 2,582 ft.
L. M. Holden's No. 4 Jones, 1,820 ft. to N line, 1,320 ft. to E line of 160 acres out of Share 5 "A," Dego Hinojosa grant.....Standing 42 ft.

JIM WELLS COUNTY

E. W. Ogden's No. 1 G. Farris, M. Perez Sur.....T. D. 2,615 ft.; shut down for holidays.

KARNES COUNTY

Ruby & Claypool's No. 1 Tom, V. Zepeda Sur., 850 ft. N line, 1,600 ft. E line.....Shut down in shale at 1,238 ft.
Benedum-Trees' No. 1 S. E. Crews, Britton Odem Sur.....T. D. 4,185 ft.; drlg. in sandy clay; top Cook Mountain 2,600 ft.
Hurador Oil Co.'s No. 1 W. E. Porter.....Reaming hole down at 3,100 ft.

KERR COUNTY

L. R. Page and associates' No. 1 Real.....Drlg. below 4,500 ft.
D. B. Mascho's No. 1 J. L. Love, C.C.S.D.&R.G.N.G. Sur., Sec. 1,594, 5,280 ft. to N line, 1,000 ft. to W line.....Water well completed; heavy duty cable tool rig on ground (first reported as O. E. Tunstill No. 1 Love Ranch).

KENDALL COUNTY

Borgett et al's No. 1 Haag, W. Avery Sur.....T. D. 680 ft.; installed heavier rig (cable tools); report showing.
Sterling's No. 1 Willie Werner, 2 miles NW from Borgett No. 1 Haag.....T. D. 880 ft.; fishing (cable tools); 110 ft. oil in hole.

KLEBERG COUNTY

Bowen-Sarles' No. 1 Robert H. Simmons, Sec. 7, King Subd., 3 miles W from Ricardo.....Rigging up.

KINNEY COUNTY

Lloyd Oil Co.'s No. 1 G. B. Moore, Sur. 117.....T. D. 2,710 ft.; in lime flowing sulphur water.
Mardon Oil Co.'s No. 2 Jim Clamp, in the John Winters Sur. No. 346, near No. 1.....Moving in cable tools.

LEE COUNTY

Byrd et al's No. 1 H. L. Bastle, 1,200 ft. N and 1,000 ft. E of 80-ac. tract of Wm. Johnson.....Drlg. 3,000 ft.
Texas-Louisiana Corp. Carbon's No. 1 Bryan, in the S. F. Austin Sur., 1,200 ft. N and W of 1,200-ac. farm.....Shut down 3,120 ft.
Todor Oil Corp.'s No. 1 H. Zsesch, in the J. Meeks Sur., 150 ft. N and 900 ft. W of S. Meeks Sur.....Shut down 2,050 ft.

LIVE OAK COUNTY

O'Neil & Catlett No. 1 Smith, 900 ft. SW line, 150 ft. NW line.....T. D. 3,500 ft.; stdg. at contract depth; to deepen.
Dr. J. K. Rowan Co.'s No. 1 Lynne Ranch, 171 ft. W of George West.....Location.
Simmons Oil Co.'s No. 1 Richard Coquat, in James C. Hill Sur., 2,250 ft. to S line, 1,750 ft. to E line, 7 miles NE of Oakville.....T. D. 1,750 ft.; drlg. in shale; drill stem test showed salt water and small amount of gas in sand at 1,675-1,700 ft.

MAVERICK COUNTY

Rycade Oil Corp.'s No. 4 J. M. Chittim.....T. D. 5,645 ft.; drlg. in brown lime.
Rycade Oil Corp.'s No. 5 Chittim.....T. D. 2,010 ft.; drlg. in lime; produced a total of 1,500 bbls. from Eagleford at 1,500 ft.; pumped dry.
Rycade Oil Corp.'s No. 3 Chittim, Blk. 7, Sur. 116, H.& G.N., 175 ft. N of No. 1, 10 ft. W, 255 ft. S line.....T. D. 6,175 ft.; drlg. in lime producing 40 bbls. light oil, 8,000,000 ft. gas.
The Texas Company, 5 miles west Darling Switch.....T. D. 4,792 ft.; shut down; showed salt water.

MEDINA COUNTY

Pat Armstrong's No. 1 C. W. Butts in George C. Hanson Sur.....T. D. 1,300 ft.; reached contract depth.
Donaldson Oil & Dev. Co.'s No. 2 Adams Co., James Hillemmeyer No. 25 Sur., 500 ft. to E line of survey, 150 ft. to S line of N half of survey.....Derrick timbers on ground.
T. N. T. Drilling Co.'s No. 1 V. Mangold, I. S. Palmer Sur. No. 20, SE cor., 1 mile from Noonan.....T. D. 1,230 ft.; shut down in Austin chalk.
Cecil Switzer's No. 1 Zerr, 6 miles west of Hondo.....T. D. 3,710 ft.; sidetracked tools and set liner; drlg. in Pennsylvanian.
R. C. Hill's No. 1 A. Wuezbach, G. Areola Sur., 500 ft. E line, 600 ft. S line.....Location.
Carl Brothers' No. 1 Saathoff, A. Smeizer No. 19 Sur.....Dropped from reports until work is resumed.

MILAM COUNTY

Service Oil & Gas Co.'s No. 1 Muldrow, L. Taylor Sur., SE cor.....Location.
Hill & Bonwell's No. 1 B. Booker, James Welch Sur.....Fishing 2,020 ft.
Lloyd Oil Corp.'s No. 1 San Clement, Fokes Sur.....Spudded in.
A. H. Wray's No. 1 D. D. Fowler.....T. D. 1,688 ft.; sidetracked 360 ft. of drill pipe lost in hole; now drlg.

McMULLEN COUNTY

Sun Oil Co.'s No. 1 Berry, J. Poitevent Sur. No. 9.....Dry and abandoned at 2,207 ft.
Cowboys Oil Co.'s No. 1 Shiner, H. M. Brewer Sur.....T. D. 2,280 ft.; shut down.

NUECES COUNTY

H. Grimm et al's No. 1 A. R. Roberts, Blk. 79, Winter Vegt. Garden Subd., 6 miles NW of Robstown, 12 miles NE Agua Dulce Field.....T. D. 2,106 ft.; drlg. in shale; corrected depth.

SAN PATRICIO COUNTY

LaFeria Oil & Gas Co.'s No. 1 C. C. Smith in J. C. White Sur., 690 ft. to N line, 350 ft. to E line.....T. D. 2,252 ft.; sand 2,246-52 ft.; odor of gas trying to make drill stem test.

STARR COUNTY

The Texas Company's No. 4-A V. G. Guerra, Porcion 67, Share 305-D.....T. D. 3,590 ft.; standing 2,300 ft. in oil, 35 gravity.
Adams, Scanlon, Scanlon & Wright's No. 1 Margo, Por. 71, Jurisdiction of Mier, 1,921 ft. W line, 430 ft. N line.....Drlg. 27 ft.
Smith & Adams' No. 1 Welch, Pedernal Sur.....Drlg. 631 ft.; set 8-in. csg. at 440 ft.

WEBB COUNTY

Everett Suiadie's No. 1 Bruni, Sur. 131, 150 ft. S line, 150 ft. W line of NW of SE.....T. D. 2,581 ft.; dry and abandoned.

UVALDE COUNTY

Waldrop & Welch's No. 1 H. S. Benson, 2 miles NW of Uvalde.....T. D. 700 ft.; drlg. in Edwards.
Phantom Oil Co.'s No. 1 Claudt, Sur. 661.....Building derrick.
Waldrop & Welch's No. 1 Edmonds, 2 miles SE from No. 1 Benson.....T. D. 600 ft.; drlg.

WILLACY COUNTY

Weimer—Richardson's No. 1 Elmore.....T. D. 1,860 ft.; shut down in gumbo.

WILLIAMSON COUNTY

Harlem et al's No. 1 H. H. Stiles, in the J. Bevil Sur., 220 ft. N and 330 ft. E of Sur.....Rigging up.
Powell & Kydendall's No. 1 Christian Mager in the W. Byerly Sur., 150 ft. N and 450 ft. E of farms of 150 acres.....Shut down 1,501 ft.

WILSON COUNTY

R. M. Sherer's No. 1 Tummilson, A. Trevena Sur.....Dropped from reports until work is resumed.
Tidal Oil Co.'s No. 1 Felix Kulesza, Susanna Larrison Sur., 235 ft. to E line, 1,320 ft. to S line of 647-ac. tract.....Drlg. in Del Rio 3,035 ft.
Trinity Drillers' No. 1 Richter, in Trevino Sur., 3,005 ft. to E line, 250 ft. to N line of 58-ac. lease.....T. D. 2,940 ft.; drlg. in shale; set 1,250 ft. 10-in. csg.
Rycade Oil Corp. et al's No. 1 George Hice, Juan Delgado Sur., 650 ft. W of Cibolo River, 150 ft. SE line of tract.....Set. surface csg.
Grayburg Oil Co.'s No. 1 Tigler, Parrot Sur.....T. D. 3,396 ft.; temp. shut down.
R. M. Sherer's No. 1 First State Bank of Stockdale, Moran Sur.....Dropped from reports until work is resumed.

ZAPATA COUNTY

R. F. Blankenship's No. 1 G. T. Montemeyer, Sur. 45, Blk. 7, 150 ft. N and E lines.....Tested about 5 gals. oil each bailer; T. D. 1,321 ft.; sand 1,309-10 ft.; steel line measure.
O. W. Killam's No. 1, J. G. Martinez Sur. No. 2, 550 ft. W line, 150 ft. S line of SE of survey.....T. D. 600 ft.; standing W. O. water.
Magnolia Petroleum Co.'s No. 3 F. G. Martinez Sur. No. 6, 660 ft. N line, 660 ft. E line of W half of survey..T. D. 1,872 ft.; sand at 1,872 ft. tested gas through tester, W. O. C.
John Pappas' No. 2 Cuellar, Por. 33 and 34.....T. D. 1,850 ft.; show oil; stdg.
National Oil Co.'s No. 1 D. B. Adams.....T. D. 670 ft.; resumed drilling; showing considerable gas.

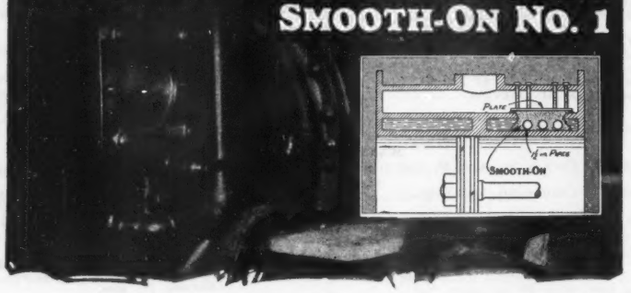
ZAVALA COUNTY

Tritex Oil Co.'s No. 1 Clay Burns.....T. D. 780 ft.; standing.
Chicago Merchants Produce Co.'s No. 1 Fee, 1 mile E of La Pryor.....Drlg. 1,000 ft.
Tritex Oil Co.'s No. 2 Childress, one-fourth mile NW of old Dominion Co.'s No. 1 Pryor.....Drlg. 650 ft.
Weigand Brothers' No. 1 W. L. Gates, Hooper & Wade Sur. No. 13, 1,320 ft. S of N line, 1,320 ft. W of NE cor. survey, about 16 miles S of Batesville.....Spudding in.

$2000 SAVED

Although three welded jobs had failed, scrapping and renewing this cylinder was avoided by using 30 lb. of

SMOOTH-ON No. 1



THE diagram shows how W. J. Lapworth, Chief Engineer of the Pittsburg, Kansas, Water Works repaired a leak in the water jacket of a 29x30-inch air-compressor cylinder. The leak was caused by a sand hole in the water jacket.

An electric welder was called in and upon inspecting the leak said that he would have to make a larger hole so that he could get his patch on the inside and do his welding on the outside, the patch to be made in two pieces to allow for expansion. The patch was finally welded in place, but when the water pressure was applied, it leaked badly and the welder spent another day trying to stop the leaks. Then it was discovered that the expansion had cracked the casting close to the hole, so a large patch in three pieces was tried with the same results, and considerable more cracking around the patches. A third patch in four pieces was then tried, the welding being done 1 inch at a time and then allowed to cool before proceeding further. This patch also was a failure and the welder finally gave up. He had worked approximately eight days and had increased the size of the hole from 4x5 to 9½x10-in.

A repair with Smooth-On was then tried. The hole was in a very inaccessible place, being in the lining of the water jacket between the cylinder proper and the air discharge passage, so the job was a rather difficult one. To avoid obstructing the water circulation in the jacket, three pieces of 1½-inch pipe were cut 18 inches long, bent to the proper radius and put in position against the wall of the cylinder, as shown. About 5 lbs. of Smooth-On was then spread on the pipes. This was followed with a piece of heavy ½ inch mesh wire and another coating of Smooth-On. Several more successive layers were applied. After allowing to partially set, a piece of steel plate was then bent to the proper radius and secured in place on the top of the patch by four 3-4 inch studs. Additional Smooth-On was put on to cover the work one-half inch thick before putting the plate in place.

When the job was finally tested, it proved to be water and air-tight, and the compressor has operated without further trouble.

As Smooth-On No. 1 has time after time come to the rescue on important jobs like this, it should have first consideration for stopping leakage of steam, water, oil, air, ammonia, etc., at cracks, porous spots and weakened joints.

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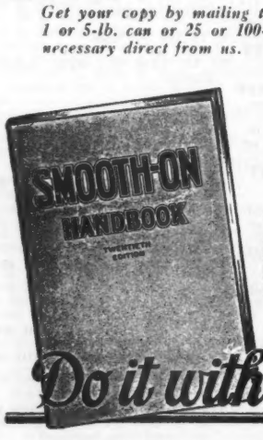

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1-2-30

Jack Baldwin's No. 1 J. R. Price, in the W. E. Erskin Sur. No. 34 ..... Spudded in and shut down.
Southern Crude Oil Purch. Co.'s No. 1 Nat M. Washer in the T. Pinckhardt Sur. No. 180, 1 deg. E, 6,795 ft. from SE cor. ..... Location.
Texas Gas & Fuel Co.'s No. 2 West in the W. Zuniga Sur. ..... T. D. 1,818 ft.; shut down; estimated 4,000,000 ft. gas; hole full salt water.
Texas Gas & Fuel Co.'s No. 3 West in the W. Zuniga Sur., 3,000 ft. from S line, 6,700 ft. from W line..... Drlg. 150 ft.

GULF COAST FIELDS AND WILDCATS

(Continued from Page 55)

Humble & Valley's No. 11-B Deutrich ..... Derrick
Humble & Valley's No. 12-B Deutrich ..... Derrick.
Humble & Valley's No. 5-B Grawunder ..... Rig.
Humble & Valley's No. 10-B Grawunder ..... Derrick.
Humble & Valley's No. 3 Helmuth ..... Derrick
Humble & Valley's No. 3 Jackson ..... Drlg. hard sand 958 ft.
Humble & Valleys No. 1-B Machamehl ..... Drlg. 409 ft.
Humble & Valley's No. 2 Mahnke ..... Derrick.
Humble & Valley's No. 6 Mueller ..... Rigging up to pump 3,270 ft.
Humble & Valley's No. 8 Mueller ..... Drlg. sandy shale 1,890 ft.
Humble & Valley's No. 6 Gotosky ..... Drlg. sandy shale 2,836 ft.
Humble & Valley's No. 1 Duncan, State land ..... Rig
Humble & Valley's No. 6 Thompson ..... Derrick.
Humble & Valley's No. 7 Thompson ..... Location.
Humble & Valley's No. 1-C Mitchell ..... Location.
Humble & Valley's No. 4 Payne ..... Drlg. rock 3,373 ft.
Humble & Valley's No. 5 Payne ..... Cem. casing 1,186 ft.
Humble & Valley's No. 6 Payne ..... Derrick
Humble & Valley's No. 7 Payne ..... Location.
Humble & Valley's No. 8 Payne ..... Location.
Humble & Valley's No. 5 Saunders ..... Rig.
Humble & Valley's No. 6 Urban ..... Sidetracking 1,975 ft.; total depth 3,086 ft.
Humble & Valley's No. 7 Urban ..... Shut down.
Humble & Valley's No. 8 Urban ..... Drlg. shale and lime 825 ft.
Humble & Valley's No. 4 Sherrill ..... Location.
Humble & Valley's No. 7-A Walton ..... Shut down 1,190 ft.
Humble & Valley's No. 8-A Walton ..... Derrick.
Humble & Valley's No. 3-A Washington ..... Derrick
Humble & Valley's No. 4 Woodley ..... Standing 1,212 ft.
Humble & Valley's No. 5 Woodley ..... Drlg. clay and sand 191 ft.
Humble & Valley's No. 6 Woodley ..... Derrick

DE WALT—FORT BEND COUNTY

Humble Oil & Refining Co.'s No. 2-C Bankers Mortgage.. Drlg. sand and lime 2,860 ft.
Humble Oil & Refining Co.'s No. 11 Brazos ..... Rig.
Humble Oil & Refining Co.'s No. 12 Brazos ..... Set 112 ft. screen 3,782 ft.; comp. flowing 334 bbls. pipe line oil.
Humble Oil & Refg. Co.'s No. 9 Camp ..... Set 203 ft. screen 3,682 ft.; comp. flowing 668 bbls. of oil on ⅝-in. choke.
Humble Oil & Refg. Co.'s No. 9 Hamner fee ..... Location.
Humble Oil & Refg. Co.'s No. 13 Sugarland ..... Rig.
Humble Oil & Refining Co.'s No. 2-B Sugarland ..... Sandy shale showing oil 3,560 ft.; set 6⅝-in. casing 3,520 ft.
Humble Oil & Refg. Co.'s No. 8 Nelson ..... Rig.

HUMBLE—HARRIS COUNTY

Gardner Oil Co.'s No. 1 Perkins ..... Temporarily abandoned.
Humble Oil & Refg. Co.'s No. 6 Williams ..... Drlg. sandy shale 5,028 ft.
Humble Oil & Refg. Co.'s No. 7 Williams (south) ..... Swabbing 5,380 ft.
Humble Oil & Refg. Co.'s No. 8 Williams (south) ..... Rig
Humble Oil & Refg. Co.'s No. 9 Williams, south ..... Drlg. sand and shale 4,787 ft.
Humble Oil & Refg. Co.'s No. 10 Williams (south)..... Drlg. shale and sand 4,306 ft.
Humble Oil & Refining Co.'s No. 2 Trahon (south) ..... Drlg. sticky shale 3,300 ft.
South Texas Petroleum Co.'s No. 12 Morris (south) ..... Rigging up to pump 5,367 ft.
South Texas Petroleum Co.'s No. 13 Morris (south)..... Drlg. sticky shale and lime 5,239 ft.
South Texas Petroleum Co.'s No. 2 Lee (south) ..... Drlg. sandy shale showing oil 4,292 ft.
South Texas Petroleum Co.'s No. 3 Lee ..... Location.
Sun Oil Co.'s No. 3 Bender (northwest) ..... Drlg. shale 3,733 ft.
The Texas Company's No. 1 Atlantic & Gulf, southeast .. Rig.
The Texas Company's No. 30 Carroll, northeast ..... Rig.
The Texas Company's No. 36 Kohler, northeast ..... Rig.
The Texas Company's No. 2 Dunman, south side ..... Drlg. sticky shale 5,050 ft.
The Texas Company's No. 3 Dunman, south side ..... Sticky shale and lime 4,603 ft.
The Texas Company's No. 4 Dunman, south side ..... Drlg. sticky shale 4,908 ft.
The Texas Company's No. 23 House ..... Abandoned 4,146 ft.
West Production Co.'s No. 2 Foster ..... Rig.

BLUE RIDGE—FORT BEND COUNTY

Cunningham Prod. Co.'s No. 6 Blakely (workover) ..... To pump.
Humphreys Corp.'s No. 4 West Schenck (workover) ..... Oil sand; shut down 3,778 ft.
E. F. Simms' No. 1 Blakely ..... Rigging.

PIERCE JUNCTION—HARRIS COUNTY

Anderson & Plummer's No. 6 Whitehead (workover) .... Drlg. 5,444 ft.
Gulf Production Co.'s No. 31 Taylor ..... Drlg. shale 3,646 ft.
Navarro Oil Co. and Texas Exp. Co.'s No. 11 Dooley (workover) ..... Sidetracking old hole.
Navarro Oil Co. and Humble Oil & Refg. Co.'s No. 5 Dooley (workover) ..... Drlg. shale 5,510 ft.
Rio Bravo Oil Co.'s No. 11-B Settegast ..... Sidetracking 1,475 ft.
Rio Bravo Oil Co.'s No. 12-A Settegast (workover) ..... Rigging up to deepen.
Rio Bravo Oil Co.'s No. 17-A Settegast, west ..... Drlg. gumbo and lime 3,527 ft.
Saxet Gas Co.'s No. 5 Herman (southwest) ..... Washing 4,063 ft.
Saxet Gas Co.'s No. 6 Herman, southwest ..... Set 70 ft. 4½-in. screen; tested slight show oil 4,414 ft.
Saxet Gas Co.'s No. 7 Herman, southwest ..... Derrick.
Superior Oil Co.'s No. 3 B. Whitehead (workover)..... Sidetracking 3,761 ft.
Superior Oil Corp.'s No. 3 Calvert ..... Location.
Superior Oil Corp.'s No. 2 Herman, southwest ..... Drlg. sandy shale 4,650 ft.
Shaw et al's No. 4-E Fitzsimmons ..... Abandoned 4,535 ft.
Smith & Plummer's No. 1 Settegast ..... Drill stem stuck at 3,500 ft.; total depth 6,091 ft.

LIBERTY—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 9 Groggan ..... Drlg. sandy shale 3,462 ft.
Empire Gas & Fuel Co.'s No. 10 Groggan ..... Drlg. sandy shale 3,596 ft.
Sun Oil Co.'s No. 52 Mitchell ..... Comp. flowing 2,000 bbls. fluid, 3 per cent water, 3,521 ft.; oil gravity 32.9°.
Sun Oil Co.'s No. 54 Mitchell ..... Location.
The Texas Company's No. 5 Green (workover) ..... Pulling screen to deepen 3,290 ft.

HULL—LIBERTY COUNTY

Empire Gas & Fuel Co.'s No. 30 Barngrover ..... Drlg. 3,879 ft.
W. B. Flynn's No. 8 Harrison (workover) ..... Drlg. 2,633 ft.
Gulf Production Co.'s No. 50 Phoenix (workover) ..... Drlg. 4,881 ft.
Gulf Production Co.'s No. 68 Phoenix (workover) ..... Drlg. 2,702 ft.
Houston Production Co.'s No. 14 Barngrover ..... Drlg. 2,632 ft.
Humble Oil & Refg. Co.'s No. 25 Guedry ..... Rig.
Humble Oil & Refg. Co.'s No. 11 Hooks-Spell (workover).. Comp. flowing 500 bbls. oil 3,904 ft.
Ocean Springs Oil Co.'s No. 1-H Palmer ..... Testing oil sand 1,438 ft.
Republic Production Co.'s No. 57 Dolbear (workover) .... Rigging up to deepen.
Republic Production Co.'s No. 122 Dolbear (workover) ... Drlg. 681 ft.
Republic Production Co.'s No. 63 Dolbear (workover) .... Rigged up to deepen.
Republic Production Co.'s No. 132 Dolbear (workover) ... Comp. pumping 300 bbls. fluid, 80 per cent oil and water, 2,951 ft.
The Texas Company's No. 8 Hannah-Vacuum ..... Drlg. 1,967 ft.

BIG CREEK—FORT BEND COUNTY

Benedum & Trees' No. 1 J. F. Ahlers ..... Derrick.
Benedum & Trees' No. 1 Moore ..... Heaving shale 4,179 ft.; washing.
Gulf Production Co.'s No. 38 Davis (workover) ..... Comp. flowing 3,000 bbls. oil, 30 gravity, ¾-in. choke, 4,292 ft.

The Texas Company's No. 4 fee (workover) ..... Reaming 3,958 ft.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 4 Mayes ..... Waiting cement to set 2,830 ft.
Pure Oil Co.'s No. 6-A Mayes ..... Cem. 8¼-in. casing 2,774 ft.; total depth 2,844 ft.
Pure Oil Co.'s No. 8 Mayes ..... **Sand shale showing oil 3,086 ft.**
Pure Oil Co.'s No. 9 Mayes ..... Derrick.
Pure Oil Co.'s No. 4 Lost Lake ..... Derrick.

NASH—BRAZORIA COUNTY

Rycade Oil Corp.'s No. 26 Wisdom ..... Drlg. hard sandy shale 5,880 ft.

BATSON—HARDIN COUNTY

Ada Belle Oil Co.'s No. 130 Carlton ..... To pump 1,284 ft.
Ada Belle Oil Co.'s No. 131 Hooks & Choate ..... Location.

SOUR LAKE—HARDIN COUNTY

Austin et al's No. 1 Watson ..... Shut down 966 ft.
Lake View Oil Co.'s No. 8 Minor ..... Drlg. 1,936 ft.
Gilbert Oil Co.'s No. 107 Gilbert ..... Derrick.
E. M. Terry's No. 1 Wirt Davis ..... Drlg. 871 ft.
The Texas Company's No. 287 fee ..... Pumped dry 2,549 ft.; to deepen.
The Texas Company's No. 305 fee ..... Derrick.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 86 Cotton ..... To pump 1,118 ft.
Rio Bravo Oil Co.'s No. 86-A Cotton ..... Drlg. gumbo and shale 558 ft.

ORANGE—ORANGE COUNTY

Supreme Oil Co.'s No. 3 Jackson (workover) ..... S detracking 3,012 ft.
Sinclair Oil & Gas Co.'s No. 2 Leon (workover) ..... Rig up to deepen.

GOOSE CREEK—HARRIS COUNTY

R. J. Bradbury's No. 5 Gillette ..... Shut down 911 ft.
Cedar Bayou Oil Co.'s No. 11 Busch ..... **Bailed dry 2,611 ft.; standing.**
Russell Ferrell's No. 4 Gillette (workover) ..... **Pulling screen to deepen.**
Humble Oil & Refg. Co.'s No. 76 Simms-Smith ..... Abandoned 5,390 ft.
Humble Oil & Refg. Co.'s No. 77 Simms-Smith ..... Rig.
Lake Shore Oil Co.'s No. 4 Duke ..... **Shut down 2,594 ft.**
J. M. West, trustee, No. 3 Scorrega ..... Drlg. 5,081 ft.

SPINDLETOP—JEFFERSON COUNTY

Yount Lee Oil Co.'s No. 55 McFaddin (workover) ..... Drlg. sand 5,362 ft.
Yount Lee Oil Co.'s No. 71 McFaddin (workover) ..... Cleaning hole to deepen 3,720 ft.
Yount Lee Oil Co.'s No. 120 McFaddin ..... Drlg. sand 5,482 ft.
Yount Lee Oil Co.'s No. 108 McFaddin (workover) ..... Drlg. sand 3,923 ft.
Yount Lee Oil Co.'s No. 121 McFaddin ..... Drlg. sand 4,239 ft.
Yount Lee Oil Co.'s No. 122 McFaddin ..... Drlg. 3,800 ft.
Yount Lee Oil Co.'s No. 99 Gladys City ..... Derrick.
Yount Lee Oil Co.'s No. 13 Gladys City (workover) ..... Drlg. sand and lime 4,059 ft.
Yount Lee Oil Co.'s No. 45 Gladys City (workover) ..... Drlg. sand and lime 4,041 ft.
Yount Lee Oil Co.'s No. 11 Fee (workover) ..... Drlg. shale and lime 4,064 ft.

WEST COLUMBIA—BRAZORIA COUNTY

Continental Oil Co.'s No. 1 Hogg ..... **Fishing drill stem 6,218 ft.; heaving shale.**
Humble Oil & Refg. Co.'s No. 3 Smith ..... Tested salt water; aband. 5,123 ft.
Saxet Oil Co.'s No. 2 Hogg ..... Drlg. shale 3,665 ft.

NORTH DAYTON—LIBERTY COUNTY

Humble Oil & Refining Co.'s No. 1 Jamison, south ..... Derrick.

HIGH ISLAND—GALVESTON COUNTY

Gulf Production Co.'s No. 5-A Smith ..... Drlg. 4,442 ft.
Marrs McLean's No. 6 Cade (old well) ..... Drlg. 4,129 ft.
Marrs McLean's No. 12 Cade (workover) ..... Sidetracking
Marrs McLean's No. 17 Cade ..... Drlg. 1,643 ft.

ORCHARD—FORT BEND COUNTY

Gulf Production Co.'s No. 20 Moore ..... Total depth 928 ft.; plugged to 450 ft. to straighten hole.

DAMON MOUND—BRAZORIA COUNTY

H. R. Cullen's No. 2 Smith ..... Set 9⅝-in. casing; total depth 3,418 ft.; heaving shale.
L. & M. Oil Co.'s No. 5 Wisdom ..... Rig.

REFUGIO—REFUGIO COUNTY

Benedum & Trees' No. 3 Rooke ..... Drlg. 5,220 ft.
Morgan Oil Corp.'s No. 1 Fox, Block 72 ..... No report.
Herman F. Heep's No. 1 Rutherford ..... Drlg. 1,711 ft.
Houston Gulf Gas Co.'s No. 1 Lambert ..... Drlg. rock 4,050 ft.
Houston Gulf Gas Co.'s No. 2 Morgan-Vance ..... Drlg. hard sand 1,048 ft.
Houston Gulf Gas Co.'s No. 3 Cummings ..... Rig.
Houston Gulf Gas Co.'s No. 6 O'Brien ..... Cem. 12½-in. surface pipe 470 ft.
Houston Gulf Gas Co.'s No. 9 T. P. Shelly ..... Rig.
Houston Oil Co.'s No. 11 Pratt-Hewitt-Rooke ..... Drlg. lime, hard sand and shale 2,643 ft.
Houston Oil Co.'s No. 12 Pratt-Hewitt-Rooke ..... Drlg. gumbo and shale 3,516 ft.
Independent Oil & Gas Co.'s No. 1 O'Brien ..... Sand showing oil and gas 6,484-6,500 ft.; setting 6⅝-in. casing.
Independent Oil & Gas Co.'s No. 1-A J. F. B. Heard ..... Cem. casing to test 3,670 ft.
Independent Oil & Gas Co.'s No. 1-B J. F. B. Heard ..... Drlg. 2,600 ft.
Independent Oil & Gas Co.'s No. 2-B J. F. B. Heard ..... Drlg. 1,100 ft.
Independent Oil & Gas Co.'s No. 1 T. P. Shelley ..... Drlg. 1,525 ft.
Independent Oil & Gas Co.'s No. 1 Huddleston ..... **Location.**
Independent Oil & Gas Co.'s No. 4 Reilly ..... Cem. casing to test oil sand.
Independent Oil & Gas Co.'s No. 6 Reilly ..... Location.
Independent Oil & Gas Co.'s No. 2 West ..... Location.
Larco Co.'s No. 1 Strauch ..... Cem. casing to test sand 3,671 ft.
Oigufer Oil Co.'s No. 3 Ryalls ..... Rig.
Saxet Oil Co.'s No. 1 Ryals ..... Cem. casing to test oil sand.
Saxet Oil Co.'s No. 3 Holmes Heard ..... Cem. casing to test oil sand.
Pearson Properties' No. 3 Fox ..... Drlg. 2,442 ft.
Ed Price et al's No. 1 Mission River ..... Derrick.
The Texas Company's No. 1 Shelton ..... Derrick.
Union Prod. Co.'s No. 2 O'Brien ..... Drlg. shale 5,010 ft.
Union Prod. Co.'s No. 2 Mitchell ..... Drlg. plug; total depth 5,438 ft.
Union Prod. Co.'s No. 2 Powers (workover) ..... Cem. 5 3/16-in. casing 5,483 ft.; total depth 5,491 ft.
Union Prod. Co.'s No. 1 Ben Shelton ..... Drlg. hard rock 3,710 ft.

SOUTH LOUISIANA FIELDS

LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co. & Gulf Refining Co.'s No. 25 Miller ..... Setting up.
Vacuum Oil Co. & Gulf Refining Co.'s No. 8 Bordages ..... Drlg. sand and shale 2,245 ft.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 4 Caldwell ..... No report.
Calcasieu Oil Co.'s No. 6 Lempke ..... Rig.
Calcasieu Oil Co.'s No. 16 Watkins ..... Rig.
Rycade Oil Corp.-Humble Oil & Refg. Co.'s No. 4 Gulf Land ..... Drlg. shale 4,216 ft.
Sunshine Oil Co.'s No. 6 Ellender ..... Derrick.
Rex Petroleum Corp.'s No. 1 Duhon ..... Rig.
Star Petroleum Co.'s No. 1 Lacey ..... Rig.
The Texas Company's No. 6 State, Calcasieu Lake ..... Location.

JENNINGS—ACADIA PARISH

The Texas Company's No. 5 Rayne heirs (King tract) ..... Drlg. 5,649 ft.
Yount Lee Oil Co.'s No. 5 Crowley, Sec. 48-9s-3w ..... Drlg. 1,068 ft.
Yount Lee Oil Co.'s No. 7 Houssiere-Latrielle, Sec. 47-9s-2w ..... Set screen and 2½-in. tubing 7,447 ft.; flowing by heads 700 bbls. pipe line oil daily; gravity 23.9° at temperature of 65°.
Yount Lee Oil Co.'s No. 1 E. F. Simms (northwest side) ..... Drlg. 6,732 ft.

EDGERLY—CALCASIEU PARISH

Drysdale-Savoy Oil Co.'s No. 2 Hill (workover) ..... Rig up to deepen.
Strange Oil Co.'s No. 1 Reed ..... Rig.
Strange Oil Co.'s No. 1 Koonce ..... Rig.
Rex Petroleum Co.'s No. 10 Hunter (workover) ..... Drlg. 4,309 ft.

VINTON—CALCASIEU PARISH

Gulf Refining Co.'s No. 49 Star-Vincent ..... Drlg. 1,501 ft.
Marrs McLean's No. 4 Gray (workover) ..... Drlg. 1,809 ft.
Vinton Petroleum Co.'s No. 5 Matilda Gray ..... Drlg. 812 ft.
Vinton Petroleum Co.'s No. 7 Gray (workover) ..... Bailing 2,811 ft.
Wilson Broach's No. 1 Vinton ..... Drlg. 1,059 ft.

BAYOU BOUILLON—ST. MARTIN PARISH

Rycade Oil Corp.'s No. 9 Bouillon fee ..... Driving derrick piling.
Rycade Oil Corp.'s No. 2 Atchafalaya fee (oil well) ..... Drlg. sand and shale showing oil 3,247 ft.
Rycade Oil Corp.'s No. 5 Atchafalaya fee ..... Spudded.

STARKS—CALCASIEU PARISH

J. O. Davis' No. 1 Industrial ..... Drlg. 2,643 ft.

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MAILING LISTS ARE READY

Bigger and better Than Ever

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Div. 3 Natural Gasoline (Manufacturers).

Div. 4 Pipe Line Companies (Oil) and Pipe Line Contractors.

Div. 4A Pipe Line Companies (Natural Gas Pipe Lines).

Div. 5 Drilling Contractors (both Rotary and Cable Tool Contractors).

Div. 6 Supply Dealers.

Div. 7 Foreign List.

Div. 8 Marketers and Jobbers of Refined Oil Products.

Div. 9 Distributors of Natural Gas.

Write for detailed description of each list and prices.

REMEMBER!—Our lists are so divided we can furnish any section of the country or any State desired.

Oil Industry Mailing List Co.

522 KENNEDY BUILDING TULSA, OKLAHOMA

Gulf Refining Co.'s No. 18 Lutcher-Moore ..... Started drilling.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 9 Yount Lee ..... Drlg. sand 926 ft.

ANSE LA BUTTE—ST. MARTIN PARISH

Yount Lee Oil Co.'s No. 1 Hebert ..... Derrick.

SORRENTO—ASCENSION PARISH

Gulf Refining Co.'s No. 17 United Land Co. ..... Rig.

MISCELLANEOUS WILDCATS

TEXAS

BRAZORIA COUNTY

Mills Bennett Production Co.'s No. 1 Allen, Allen Dome.. Drlg. shale and lime 4,717 ft.
Faust et al's No. 5 Faust ..... Shut down 3,248 ft.
Shell Petroleum Corp.'s No. 1 Blakely-Winston, Danbury ..... Drlg. gumbo 2,987 ft.
Steel & Strickland's No. 1 Lockridge ..... Rig.

CHAMBERS COUNTY

Chicago Oil Corp.'s No. 1 Lawrence ..... No report.

FORT BEND COUNTY

Gulf Production Co.'s No. 1 Brazos Valley, Clodine ..... Rigging.
Pure Oil Co.'s No. 1 Farris, Roberts Sur. ..... Location.

HARRIS COUNTY

Baldwin and associates' No. 1 Kitzman, Cypress ..... Shut down 4,055 ft.
R. E. Brooks' No. 1 Beall, Eureka ..... Drlg. sandy shale 1,243 ft.
Golf Crest Oil Co.'s No. 1 Gulf Crest ..... Aband. 2,520 ft.
A. F. Belunek's No. 1 Thompson ..... Rig.
Cranfill & Reynolds' No. 1 Brown ..... Drlg. shale 4,390 ft.
Hammond et al's No. 1 Brodt ..... Gumbo 1,190 ft.; shut down after fire.
Higgins Oil & Fuel Co.'s No. 1 Siadous, Mykawa ..... Drlg. water sand 3,728 ft.
Humble Oil & Refg. Co.'s No. 7 Warren, Hockley ..... Spudded.
Humble Oil & Refg. Co.'s No. 2 Minnetex ..... Standing with casing cem. 1,177 ft.
Humble Oil & Refg. Co.'s No. 1 Siadous (workover) .... Drlg. sand and shale 3,661 ft.
Humble Oil & Refg. Co.'s No. 2 Woodburn ..... Drlg. shale 3,651 ft.
Rich et al's No. 1 Highlands ..... Derrick.
Torsen et al's No. 1 Stewart ..... Aband. 2,532 ft.
Watts Brothers' No. 1 Hubert, Mykawa ..... Drlg. sandy shale 4,132 ft.
York & Robertson's No. 1 Garrett, Harris & Carpenter Sur. ..... Aband. 1,917 ft.

JEFFERSON COUNTY

Gulf Production Co.'s No. 5 Bordages ..... Drlg. 5,412 ft.
Gulf Production Co.'s No. 4 Burrell ..... Comp. flowing 3,000 bbls. oil, 31 gravity, 4,248 ft.
Gulf Production Co.'s No. 2 Guy Junker, Fannette ..... Drlg. 4,006 ft.
River Oil Corp.'s No. 1 Ship Channel, Brown Survey .... No report.
Rosedale Oil Co.'s No. 1 Walker ..... Standing after testing salt water 1,649 ft.
Stilwell Oil Co.'s No. 1 Brinkman ..... No report.
The Texas Company's No. 2 Pipkin, Big Hill ..... Washing 5,884 ft.
The Texas Company's No. 1 Fitzhugh, Big Hill ..... Drlg. sand and shale 5,758 ft.
Westbury Oil Co.'s No. 1 West, Choate Survey ..... Drlg. 401 ft.

LIBERTY COUNTY

Campbell et al's No. 1 fee ..... Rig.
Gulf Production Co.'s No. 1 Weiser ..... Drlg. 5,529 ft.
Gulf Production Co.'s No. 3 Boyt, Hankamer ..... Tested salt water 3,698 ft.; pulling screen.
Humble Oil & Refg. Co.'s No. 6 Sterling, Moss Bluff .... Pulling tubing 5,661 ft.
Cranfill Reynolds Co.'s No. 1 Vajdak, Sheeks ..... Comp. gas well 5,750 ft.; shut in.
Cranfill & Reynolds Co.'s No. 4-A Esperson, Sheeks ..... Drlg. shale 1,003 ft.
Cranfill & Reynolds Co.'s No. 5-A Esperson, Sheeks ..... Drlg. sand 756 ft.
Cranfill & Reynolds Co.'s No. 6-A Esperson, Sheeks ..... Location.
Yount Lee Oil Co.'s No. 2 Moores Bluff, Sheeks ..... Drlg. shale 4,212 ft.

MATAGORDA COUNTY

Cockburn et al's No. 1 Hawkins, Shepherds, Mott ..... Location.

MONTGOMERY COUNTY

Kelley-Baker et al's No. 1 Juerges ..... No report.
Pure Oil Co.'s No. 1 Damphier, Smith Sur. ..... Abandoned 1,197 ft.

ORANGE COUNTY

Gulf Production Co.'s No. 1 J. H. Starks, Port Neches ... Drlg. 5,791 ft.
Gulf Production Co.'s No. 1 M. H. Starks, Port Neches ... Location.
The Texas Company's No. 2 Polk, Port Neches ..... Rig.

SOUTH LOUISIANA

ASCENSION PARISH

Triumph Oil Corp.'s No. 2 Lacey, Sec. 20-10s-4e ..... No report.

ASSUMPTION PARISH

Gulf Refining Co.'s No. 1 Armitese, Napoleonville ..... Rig.
Poor Boys Drilling Co.'s No. 1 LeBarre, Sec. 47-12s-13e .. Rigging up.

CALCASIEU PARISH

Wilfred Lahay's No. 2 James ..... No report.

CAMERON PARISH

Shell Pet. Corp.'s No. 6 Watkins, Black Bayou ..... Swabbed salt water 4,956 ft.; pulling casing.
Shell Pet. Corp.'s No. 12 Watkins (workover) ..... Pulling screen to deepen 5,221 ft.
Shell Pet. Corp.'s No. 1 Marceaux, Mallard Bay, Sec. 32-12s-3w ..... Drlg. sticky shale 5,972 ft.
The Texas Company's No. 5 Calcasieu Lake, Calcasieu Lake Dome ..... Location.
Vacuum Oil Co.'s No. 1 Cameron Meadows, Sec. 21-14s-13w ..... Location.
Yount Lee Oil Co.'s No. 1 Starks, Sec. 1-15s-15w ..... Drlg. 7,600 ft.

IBERIA PARISH

The Texas Company's No. 4 Vermillion Bay ..... Drlg. rock 4,659 ft.

IBERVILLE PARISH

Shell Petroleum Corp.'s No. 4 Wilbert, White Castle .... Location.
Standard Oil Co.'s No. 4 Wilbert, Bayou Blue ..... Failed to flow 2,114 ft.; drilling deeper.
Standard Oil Co.'s No. 4 Schwing, Bayou Blue..... Location.
Standard Oil Co.'s No. 3 Schwing, Bayou Blue ..... Drilling.
Standard Oil Co.'s No. 5 Wilbert, Bayou Blue ..... Building derrick.
Standard Oil Co.'s No. 1 Cuse, Bayou Des Glaise ..... Location.

JEFFERSON DAVIS PARISH

Pure Oil Co.'s No. 1 May, Sec. 1-10s-5w ..... Rig.
Yount Lee Oil Co.'s No. 1 Courtney, Welsh ..... Rig.

LA FOURCHE PARISH

Gulf Refining Co.'s No. 25 Stark, Thibodaux ..... Drlg. 3,129 ft.
Gulf Refg. Co.'s No. 1 City of New Orleans, Bay Cham- Drlg. 1,372 ft.

PLAQUEMINE PARISH

Humble Oil & Refg. Co.'s No. 1 Cockrell-Moran, Lake Grand Ecaille ..... No report; previous report: drlg. gumbo 830 ft.
Humble Oil & Refining Co.'s No. 1 Lake Washington, Lake Grand Ecaille ..... Total depth 4,260 ft.; reaming.
The Texas Company's No. 3 Garden Island Bay ..... Waiting cem. to set 1,766 ft.

ST. LANDRY PARISH

Elbof Exploration Co.'s No. 1 Ledoux, Eunice..... No report.
Herbert-Baker Oil Co.'s No. 1 Fisher, Section 10-3s-4e... No report.
Gulf Refining Co.'s No. 1 Hoskins, Port Barre ..... Oil sand 3,476 ft.; to test.
Gulf Refining Co.'s No. 1 Ovide Lahaye, Port Barre ..... Rigging.
The Texas Company's No. 3 Botney Bay, Port Barre .... Drlg. 1,304 ft.

ST. MARTIN PARISH

Ohio Oil Co.'s No. 5 Martin, Hager ..... Aband. in salt 1,584 ft.
The Texas Company's No. 1 fee, Hager Dome ..... Drlg. 5,658 ft.
The Texas Company's No. 3 fee, Hager ..... Location.
The Texas Company's No. 2 St. Martin, Hager ..... Drlg. shale, lime and sand 4,425 ft.
The Texas Company's No. 4 fee, Hager ..... Location.
The Texas Company's No. 1 Iberville, Hager ..... No report.
The Texas Company's No. 2 Iberville, Hager ..... Location.
The Texas Company's No. 3 Iberville, Hager ..... Location.

ST. MARY PARISH

Vacuum Oil Co.'s No. 1 Zenor, Patterson ..... Derrick.

TERREBONNE PARISH

The Texas Company's No. 4 State-Bay St. Elaine ..... Location.
The Texas Company's No. 2 La. L. & E. Co., Dog Lake.. Drlg. sand 2,871 ft.
The Texas Company's No. 1 State—Bay Junop..... Coring sand showing oil topped at 4,778 ft.
The Texas Company's No. 3 State—Lake Pelto..... Rig.
The Texas Company's No. 2 State—Caillou Island..... Cem. surface casing 1,103 ft.
The Texas Company's No. 3 State—Lake Barre ..... Rig.
The Texas Company's No. 4 State, Lake Barre ..... Location.
The Texas Company's No. 3 L. L. & E. Co., Four Isle .... Location.

SOUTHWEST TEXAS

(Continued from Page 52)

Henne-Winch-Fariss—Zapata County

Magnolia Petroleum Co.'s No. 5 Martinez, Survey 6, 660 feet S line, 660 feet E line of S line of Magnolia tract in NW of survey, total depth 1,875 feet, sand at 1,870-75 feet, 25,000,000 feet of gas, 580 pounds rock pressure.

ABANDONED TESTS

Darst Creek—Guadalupe County

Mundine Investment Co.'s No. 1 L. V. Echols, James Hodges Survey, in 11-acre tract out of S point of L. V. Echols tract, 150 feet to NW and SW lines of tract, 3,650 feet to SW, 4,200 feet to NW lines of survey, total depth 2,814 feet, plugged and abandoned.

Magnolia Petroleum Co.'s No. 1 C. Zedler, James Hodges Survey, 150 feet to NW and NE lines of 100-acre tract, abandoned.

Alworth Pool—Jim Hogg County

Alworth-Stevens' No. 1 Garza, Block 12, Survey 40, 450 feet NW lines, 150 feet NE lines, total depth 1,043 feet, sand at 1,034-43 feet, abandoned.

Jennings Pool—Zapata County

South Texas Production Co.'s No. 7 Joe Jennings, Cerrito Blanco Grant, 640 feet SE line, 660 feet NE line, total depth 1,905 feet, abandoned.

NEW LOCATIONS

Darst Creek—Guadalupe County

Abercrombie and others' No. 1 Dix, location; Humble Oil & Refining Co.'s No. 2 Baker, J. C. Darst Survey, W of No. 1 Baker, location; Humble Oil & Refining Co.'s No. 3 Baker, J. C. Darst Survey, W of No. 2, location; Humble Oil & Refining Co.'s No. 1 Sally Wilson, J. C. Darst Survey, 150 feet N line, 183 feet W line, location; Humble Oil & Refining Co.'s No. 1 Yates Wilson, J. C. Darst Survey, 150 feet N line, 183 feet W line, drilling in chalk at 2,250 feet; Magnolia Petroleum Co.'s No. 3 Dix, J. R. Robinson Survey, 300 feet SW of No. 2 Dix, spudding in.

Magnolia Petroleum Co.'s No. 1 J. M. Richbury (102-A) in the J. R. Robinson Survey, 150 feet from S and E lines, rigging up.

Magnolia Petroleum Co.'s No. 2 C. Zedler in the J. Hodges Survey, 150 feet from S line and W line, location.

The Texas Company's No. 3 Dallas Wilson in the J. C. Darst Survey, 150 feet N of center of S line, location.

Cole Pool—Webb County

O. W. Killam's No. 16 Bruni, Block 45, Survey 8, Mariano Arispe Grant, 328 feet NE line, 300 feet N line of Survey 8, Adams (Foltz) Subdivision of Bruni lands, spudded in.

Jennings Pool—Zapata County

O. W. Killam's No. 19 Cuellar, Cerrito Blanco Grant, out of 1,772-acre Cuellar tract, location.

DRILLING ACTIVITY

Buchanan Pool—Caldwell County

Al Buchanan's No. 1 Medlin, 150 feet from S and W lines of farm, spudded in.

Darst Creek—Guadalupe County

Cranfill & Reynolds' No. 1 Appling in the J. Hodges Survey, 150 feet E and 150 feet most eastern SE of W line of 117-acre farm, 2,300 feet NW and 3,650 feet SW of survey, Block 66, rigging up.

Empire Gas & Fuel Co.'s No. 1 Dowdy in the Jacob Darst Survey, 150 feet each way NE corner of E. A. Dowdy 40-acre tract, drilling at 2,426 feet in Buda.

Gulf Production Co.'s No. 1 C. Anderson in the J. C. Darst Survey, 450 feet from S line, 150 feet from E line of farm in Darst Survey, spudded in. Same company's No. 1 Thomas Dix in the Joel R. Robinson Survey, 150 feet to NE and SE lines of lease, 300 feet SW of United North & South Development Co.'s No. 1 Dix, drilling in shale at 710 feet. Same company's No. 1 Tadlock in the Jacob C. Darst Survey, 150 feet NW corner, rigging up.

Humble Oil & Refining Co.'s No. 1 Baker in the Jacob Darst Survey, 150 feet each way from SW corner of D. D. Baker 60-acre tract, drilling in chalk at 2,260 feet. Same company's No. 1 L. G. Denman in the A. S. Emmett Survey, 1,700 feet S line and 150 feet NE line of survey, setting casing at 2,562 feet. Same company's No. 2 L. G. Denman in the A. S. Emmett Survey, 1,500 feet S line, 150 feet NE line of survey, drilling in at 2,563 feet. Same company's No. 3 Sally Wilson in the Jacob Darst Survey, 150 feet each way out of SW corner of Sally Wilson and others' 50.5-acre tract, drilling in shale at 675 feet. Same company's No. 2 Yates Wilson in the Jacob Darst Survey, 1,250 feet from N line, 150 feet E line of W line of 1,056-acre lease, 2,050 feet SW of Dallas Wilson's well, spudded in.

Magnolia Petroleum Co.'s No. 1 A. M. Baker in the Joseph Hodges Survey, 2,875 varas from SW line, 810 varas from NW line of survey, drilling in shale at 2,593 feet. Same company's No. 1 L. V. Echols in the Joseph Hodges Survey, 150 feet to NW and SW lines of farm, 3,650 feet to SW, 3,220 feet to NW of survey, location. Same company's No. 2 L. V. Echols in the James Hodges Survey, 150 feet SW and SE lines of lease, derrick up. Same company's No. 1 Peter Klien in the Joel R. Robinson Survey, 150 feet to NE line of lease, 150 feet SW of SW line of Alexander Survey, cored Edwards, not very porous, total depth 2,628 feet. Same company's No. 1, W. P. Walker Survey 1,150 feet NW and SW corner of farm or 3,650 feet SW, 3,220 feet NW line of survey, rigging up.

Penn Oil Co.'s No. 1 Rand Miller in the Jerome B. Alexander Survey, drilling in Taylor Marl at 2,165 feet.

Sun Oil Co.'s No. 1 Knoblock in the Joel R. Robinson Survey, 150 feet each way out of S corner of Chris Knoblock 150-acre in SW part of survey, drilling in hard shale at 2,025 feet.

The Texas Company's No. 2 Dallas Wilson in the J. C. Darst Survey, 150 feet to S and W lines, spudded in. Same company's No. 2 L. Anderson in the Jacob Darst Survey, 150 feet to N and E lines, shut down at 685 feet. Same company's No. 3 Anderson in the Jacob Darst Survey, 150 feet to N and W lines, derrick (corrected). Same company's No.4 Lemmie Anderson in the J. C. Darst Survey, 150 feet to N and W lines of farm, rigging up. Same company's No. 1 Posey, offsetting the Sun Co.'s No. 1 Knoblock, 300 feet to the SE, drilling in chalk at 2,195 feet.

Turman Oil Co.'s No. 1 Dowdy, SE corner of D. D. Baker 60-acre tract, 2,100 feet SW of Dallas Wilson No. 1, drilling in lime rock at 2,550 feet. Same company's No. 2 Rand Miller in the Jerome B. Alexander Survey, center of lease, drilling in shale at 900 feet.

United North & South Development Co.'s No. 2 Thomas Dix, Joel R. Robinson Survey, 150 feet to SE line of lease, 450 feet to SW line of lease, 300 feet NE of No. 1 Dix, ready to spud.

Pettus Field—Bee County

Mission Drilling Co.'s No. 6 Ray, 1,200 feet E of No. 2, drilling in gumbo at 2,650 feet.

Lasater Pool—Brooks County

Houston Oil Co.'s No. 1 Holbein-Wormser in the Palo Blanco de Maguellas Survey, 330 feet N line, 6,540 feet E line, direct offset 660 feet S of No. 1 Lasater, total depth 4,000 feet, testing gas sand.

Kingsville Pool—Kleberg County

Humble Oil & Refining Co.'s No. 8 R. J. Kleberg, Lot 7, Section 40, K.T.&I. Survey, 150 feet S and E lines of lot, trying to complete for a dry gas well in a sand at approximately 2,400 feet.

Cartwright Pool—Live Oak County

Houston Oil Co.'s No. 2 J. B. Dunning in the M. B. Kilvin Survey, 1,445 feet N of No. 1, drilling in shale at 4,058 feet.

White Point—San Patricio County

Spencer & Rhodes' No. 2 The Texas Company Fee, Lot 6, Roos Subdivision, 150 feet to S and W lines of W 50 acres, derrick partly built, standing.

Nursery Field—Victoria County

Humble Oil & Refining Co.'s No. 3-A Jay J. Welder in the D.L.&C. Survey, 1,634 feet SE lines, 736 feet SW lines, 1½ miles NE from Nursery, drilling in shale at 5,415 feet.

Cole Pool—Duval County

Allied Gas Co.'s No. 3 Dinn, Survey 143, 660 feet N line, 660 feet E line of

NE of SE, total depth 1,732 feet, sand at 1,720-32 feet, testing.

Magnolia Petroleum Co.'s No. 2 King-Benavides, Block 12, Survey 694, 450 feet N line, 150 feet W line, location.

J. G. Mackay's No. 3 Dinn, Survey 454, 660 feet W line, 660 feet N line of NW of SW, rigging up.

Kohler Pool—Duval County

Humble Oil & Refining Co.'s No. 38 Kohler, Survey 144, 990 feet N line, 495 feet E line, drilling at 1,170 feet. Same company's No. 39 Kohler, Survey 165, 1,650 feet S line, 330 feet E line, spudded in.

Schoolfield-O'Byrne—Duval County

C. E. Long's (Shell) No. 4 Hahl, Block 26, Survey 250, 330 feet E line, 150 feet N line, drilling at 2,100 feet.

Randado Pool—Jim Hogg County

Randado Oil Corp.'s No. 35 Palacious, Block 2, Survey 291, 150 feet S line, 450 feet E line, standing at 100 feet.

Magnolia Petroleum Co.'s No. 1 Weil, Block 2, Survey 5, 660 feet N line, 349 feet E line, drilling at 750 feet.

Henne-Winch-Fariss—Jim Hogg County

George S. Marshall's No. 4 Holbien, Share 3, Block 10, Survey 11, 150 feet S and W lines, derrick up. George S. Marshall's No. 5 Holbien, Share 3, Block 10, Survey 15, 150 feet N and W lines, rigging up.

Aviator Pool—Webb County

C. E. Mayberry's No. 9 Puig, Block 1, Edgingston Subdivision, Puig ranch, Albercas Grant, 729 feet W line, 1,100 feet N line, total depth 1,596 feet, sand, set 6⅝-inch casing at 1,566 feet, sand at 1,571-75 feet, sand at 1,590-96 feet, waiting on cement.

Carolina-Texas—Webb County

Foster Barnsley's No. 7 Webster, Survey 684, 750 feet E line, 510 feet S line of NE of SW of survey, drilling at 1,700 feet.

W. R. Shankle's No. 2 Webster, Survey 684, 1,170 feet W line, 150 feet S line, rigging up.

Magnolia Cole Pool—Webb County

Magnolia Petroleum Co.'s No. 1 F. Benavides, Survey 660, 660 feet N line, 660 feet E line of N half of SE of survey, drilling at 2,331 feet. Same company's No. 2 C. Benavides, Survey 662, 660 feet W line, 660 feet S line, total depth 2,335 feet, running tubing. Same company's No. 3 C. Benavides, Survey 662, 1,980 feet W line, 1,980 feet S line, drilling at 2,040 feet. Same company's No. 4 Brennan-Benavides, Mariano Arispe Grant, corner Blocks 16, 17, 52, 53, Myrtle E. Hale Subdivision, drilling at 2,203 feet. Same company's No. 1 D. Benavides, Block 14, Survey 694, 660 feet to E and S lines, rigging up.

Cole Gas Field—Webb County

E. H. Buckner's (Sun) No. 1 Bruni, Survey 5, Adams Subdivision, corner Blocks 4, 5, 9, 10, Adams (Foltz) Subdivision, Mariano Arispe Grant, drilling at 1,600 feet.

Magnolia Petroleum Co.'s No. 1 S. Perez, Survey 460, J. Poitevent, 1,980 feet N line, 660 feet W line, standing at 3,600 feet. Same company's No. 2 King-Harper, Block 2, Survey 323, 660 feet N and E lines, location.

Houston Oil Co.'s No. 20-D Benavides, Block 5, Survey 753, 566 feet N line, 666 feet E line, total depth 2,351 feet, testing, set 6⅝-inch casing at 2,346 feet, sand ta 2,346-51 feet.

Charco Redondo—Zapata County

W. R. Duke's (Duke & Evangeline) No. 2-B Martinez, Block 17, W. R. Duke Subdivision, Charco Redondo Grant, drilling at 900 feet.

Jennings Pool—Zapata County

O. W. Killam's No. 17 Cuellar, 600 feet N line, 940 feet E line, 160-acre Cuellar tract, out of 1,772-acre Cerrito Blanco Grant, derrick. O. W. Killam's No. 18 Cuellar, Cerrito Blanco Grant, 3,567 feet NW line, 2,734 feet NE line of 1,772-acre Cuellar tract, drilling at 1,820 feet.

R. F. Blankenship's No. 2 Garza, Block 2, Survey 413, 425 feet W line, 425 feet N line, derrick.

Harry L. Fansler's No. 1 F. Cuellar, Survey 285, 150 feet W line, 1,170 feet N line, drilling at 1,600 feet.

Blair & Acklin's No. 2 Trevino, Block 1, Survey 66, 150 feet W line, 200 feet N line, total depth 1,254 feet, sand at 1,251-54 feet, pulled 6⅝-inch casing 387 feet, preparing to reset 6⅝-inch casing at 1,251 feet.

R. F. Blankenship's No. 1 Garza, Block 13, Survey 413, 160 feet N and E lines, resumed drilling at 1,510 feet.

South Texas Production Co.'s No. 2 Roy Jennings, Cerrito Blanco Grant, 13,000 feet to NW line, 9,800 feet to SW line, drilling at 2,125 feet, sand at 2,121 feet, tested salt water.

South Texas Production Co.'s No. 8 Joe Jennings, Cerrito Blanco Grant, 2,640 feet SE line, 2,660 feet NE line, drilling in rock at 1,849 feet.

Henne-Winch-Fariss—Zapata County

Magnolia Petroleum Co.'s No. 4 F. G. Martinez, Survey 4, 660 feet S line, 660 feet E line of W half of survey, total depth 1,884 feet, sand, waiting on cement.

CALIFORNIA FIELDS

(Continued from Page 60)

near future, one of which, No. 11, is at present being rigged up. The General Petroleum is down 1,450 feet in No. 2 Ferguson, which is being drilled out in the open ocean on a tideland drilling permit at Rincon and good progress is being made. This project is located at the end of a 1,700-foot pier of steel construction completed a short time ago at a cost of approximately $140,000. The Chanslor-Canfield Midway Oil Co. is running three strings of tools on the Hobson lease in the Rincon Field at the present time and is rigging up another. No. 6, for early work. No. 2-A Hobson has just passed the 4,650-foot level without picking up the pay and the outlook is not considered any too favorable, although a change for the better may take place at any time now.

Midway-Sunset

Two more new wells were finished out in the Maricopa flats section of the Midway-Sunset Field of Kern County during the past week and a check indicates the probable completion of several more during the next few weeks. No. 2 Havenstrite of the Rio Grande Oil Co. was the premier completion in this area during the past seven-day period. This new well, which was bottomed at 3,491 feet, registered an initial daily production of 3,515 bbls. of unusually clean 22.4 gravity oil daily previous to being pinched back. This project showed better than 1 bbl. of oil for each foot of hole made. No. 5 Sunset Extension of the North American Consolidated only showed an initial of 200 bbls. daily from 3,346 feet, due presumably to some abnormal condition, as the well is located in territory proven up for larger production. During the next few weeks a number of other potential producers are scheduled for completion and daily production should reflect a substantial increase unless the movement under way to curtail production prevents the anticipated gain. Included in this list are No. 2 Maricopa of the Birch Oil Co., No. 3 Weir of the Doyle Petroleum, No. 7 Kerckhoff of the North American, No. 3 Leutholtz of the Rio Grande, No. 1 Son of the Union Oil Co. and several wells of the Standard Oil Co. in Sections 9 and 16. The Western Gulf's No. 10-B on the Kern County Land Co. lease created a little excitement in the Fruitvale Field of Kern County this week by staging a premature blowout during the course of a water test at 3,653 feet. The Shell's operations in this field during the past week consisted of running tubing in No. 1 Brackenburg preparatory to making a production test and the starting of rig construction for a second project on the Kern County Land Co. lease in Section 36-28-26.

Drilling operations in the Mount Poso Field of Kern County have shown a slight decline during the past few weeks due to the desire of operators to restrict development work and at the same time limit production. Only two wells were finished in this field during the week, both of them by the Union Oil Co. These were Nos. 6 and 8 on the Tribe lease in Section 28-27-28. The former showed an initial pumping of 75 bbls. daily from 1,679 feet while the latter made 100 bbls. on the beam from 1,700 feet. The Petroleum Securities has completed tentative plans for a 1,000,000-bbl. earthen reservoir on the Jaynes property in Section 2-29-27 in order to provide storage facilities for its Mount Poso and other curtailed production in Kern County. This company has completed 18 wells on the Glide property in the Mount Poso Field up to the present time and will be obliged to resume production early in 1930 due to lease requirements. These wells were all shut in immediately upon completion and if they come back at their initial daily production the Petroleum Securities will increase the field's daily production about 4,000 bbls.

In addition to resuming production at Mount Poso, the Petroleum Securities will be obliged to open up two producing wells finished some time ago on the Coffee lease in the Round Mountain Field. The company spudded in another well on the Gardner lease in the latter district during the past week and this project should be completed some time within the next 30 days. The Shell is working on two drilling projects in the Round Mountain Field at the present time and both of them are scheduled for early completion. Drilling operations in the Kern River Field have shown a very substantial decline during the past few months and a check reveals the fact that there are only four incompleted drilling projects under way at the present time. Three of these, the Richfield's No. 6 in Section 22-28-27, No. 14 Whetmore of the General Petroleum and the Chanslor-Canfield Midway Oil Co.'s No. 30 in Section 23-28-27, should be finished early in January.

Long Beach

Only one well was put on production in the Long Beach Field during the past week, although No. 28 Municipal of the A. T. Jergins Trust was being swabbed at a late hour. Another well, No. 1 Union Pacific of the Richfield Oil Co., was being drilled out this morning and should likewise be tanking oil soon. The new well added was Robert Bowles' No. 4 Signal, which was returned to production flowing 760 bbls. daily upon being redrilled and deepened to 7,378 feet. Two wells were finished in the Richfield district this week and another will be on production within the next few days. The best producer finished was the Union's No. 9 Morse, which was brought in pumping 185 bbls. daily from 4,260 feet. No. 1 Rose Schlachter of the Continental was finished pumping 120 bbls. per day from 4,425 feet, the hole having been plugged back from 4,473 feet. The next producer to be finished in this field should be No. 1 Griffith of the Superior Oil Co. as it is in the pay at 4,611 feet. At Potrero, York & Lockhart were forced to put No. 2 on a compressor at 3,805 feet due to the failure to get a natural flow. It proved to be a distinct disappointment as it was only good for 95 bbls. daily. The status of this field at the present time is very unsatisfactory and unless a deeper zone is found very few wells will ever pay out.

CANADIAN FIELDS

(Continued from Page 56)

the lime. Royalite Oil Co.'s No. 14, LSD 4, Section 7-20-2w5, while cleaning at 3,688 feet blew back into production with a big gas flow, estimated 30,000,000 feet a day. The flow lasted only a few hours, and cleaning and deepening has been resumed. This test got the lime at the record shallow depth of 3,220 feet and got some production in the lime with the diamond drill, but gradually choked off. It is about a half mile south of Royalite's No. 4.

Other Deep Lime Tests

Among other Imperial tests, Royalite Oil Co.'s No. 16, LSD 2, Section 12-20-3w5, is 1,289 feet in the lime at close to 6,000 feet depth and preparing to make a production test. This test is the deepest in the field, except the abandoned British Dominion's No. 1, and except for McLeod Oil Co.'s No. 4 is the deepest in the lime. It has apparently reached the lower producing horizon which McLeod's No. 4 got approximately 1,250 feet in the lime.

Deep lime tests by other companies include two in the South Turner Valley. East Crest Oil Co.'s No. 1, LSD 5-6, Section 16-19-2w5, is reported drilling 112 feet in the lime at 4,421 feet depth, after a small fishing job. Some additional gas has been met, apparently corresponding to the intermediate flow met in the Home's No. 1 producer around 115 feet, and the two wells are reported logging very close.

In the central Turner Valley, British Dominion Oil Development Corp.'s No. 2, LSD 6, Section 12-20-3w5, is drilling over 100 feet in the lime at 5,167 feet and gradually increasing its wet gas production, now estimated around 4,000,000 feet a day.

Tests by the Imperial Oil group, chiefly in the South Turner Valley, are making rapid headway. Several new tests have been started. It is reported that Royalite's No. 25 will spud in about 150 feet north of Home Oil Co.'s No. 4 early in January.

Home Oil Operations

A statement to shareholders of the Home Oil Co. of Vancouver, B. C., reviews its operations up to December 15. Home's No. 1, which came into production in the deep lime in February, 1929, had produced 17,321 bbls. of light crude and 166,978 bbls. of clear naphtha, netting the company $648,467.65. Home's No. 2, which became a deep lime producer in May last, had produced 24,245 bbls. of light crude and 60,830 bbls. of naphtha, representing a revenue of $279,205.97. Home's No. 3, a deep lime producer since August, had a production of 77,962 bbls. of naphtha, worth $268,189.28. Since August, Home's No. 4 has produced 2,087 bbls. of light crude from the Dalhousie sand, and is now being drilled into the lime. The three big producers got production at an average depth of 165 feet in the lime. No. 5 was reported in the lower Dakotas at 3,262 feet with 12-inch casing set at 3,173 feet; and No. 6 standing with 20-inch casing cemented at 200 feet.

Up to December 15 the company's producing wells had returned a revenue of $1,195,862.90. Of this amount, disbursements for drilling and operation amounted to $449,186.89; royalties, $40,205.47; other expenses, $37,569.23; and dividends, $528,000. During the year there were a number of conferences with other companies in regard to the possibility of the Home Oil Co. extending its holdings; but the board decided against taking on additional territory, pending the shareholders' meeting in January. Drilling operations on Home acreage are handled and financed by Imperial Oil, Ltd. The Home wells have yielded in 1929 approximately 35 per cent of the Turner Valley production.

South Turner Valley

In the South Turner Valley, Merland Oil Co.'s No. 1, LSD 13, Section 27-18-2w5, has contracted with Regal Oil & Refining Co. of Calgary for its crude naphtha production. The Regal pipe line will ultimately be extended about 7 miles to the Merland well, and in the meantime production will be hauled in trucks to the end of the present line at the Okalta lease. The well is making a steady production of 100 bbls. a day from the Dalhousie sand at 4,470 feet, and experiments with pressure adjustments and a second separator have failed to increase this initial production. The product is a high grade crude naphtha; early tests by Imperial Oil, Ltd., showed it to be 77.7° and tests of later samples by government officials showed a grade of 78.9°. The product is reported free from sulphur, which is found in the napthas from the deep lime.

Merland's No. 2, same section, has cellar dug. Lundy Petroleum's No. 1 has material on the ground for a test north of Merland's No. 1. Canadian Oil & Development Co., representing English capital, has secured 900 acres south of the Merland holdings, which will be tested for possible extension of the structure

Acreage is in Sections 9, 10, 11, 15, 22 and 32, Township 18-2w-5, and was reported on by Geologist E. H. Cunningham-Craig.

Calmont's No. 10, LSD 11, Section 20-19-2w5, is spudding in, and Nos. 11 and 12 are rigging up.

Freehold Oil Corp.'s No. 3, LSD 8, Section 20-19-2w5, has cellar dug. Nos. 4 and 5 will be started in the same LSD, derrick timbers for both having been ordered. Commonwealth Petroleums' No. 2, LSD 7, Section 9-19-2w5, is drilling through the Dalhousie sands, and will make a test of that horizon.

Mercury Oils' No. 3, LSD 12, Section 4-19-2w5, is drilling out cement preparatory to a test.

On the opposite side of the structure to the Mercury group, Spray Oils' No. 1 is reported resuming activity after a considerable delay. This test got to 1,938 feet or more, but owing to caving had to cement back to 1,575 feet. The well is underreaming for 12½-inch casing which is down to 1,560 feet, and casing will be carried behind the bit to 2,500 feet.

Vanberta Oils' No. 2, LSD 5, Section 34-17-2w5, is reported rigged up.

Regent Oil Co. is financing completion of Nos. 2 and 3 tests in LSD 16, Section 1-20-3w5, shut down at 2,175 and 2,545 feet. Regent's No. 1, same LSD, is producing from the deep lime around 63 bbls. a day. Okalta Oils' No. 2, LSD 8, Section 1-20-3w5, is drilling at 4,330 feet after encountering some shows of light crude. Widney Petroleum's No. 1, LSD 11, Section 12-20-3w5, is delivering about 100 bbls. a day of 54 gravity crude to Imperial Oil, Ltd., from the Dalhousie sand.

Structure Oil & Gas' No. 1, LSD 7, Section 31-19-2w5, is drilling at 2,436 feet after encountering a quantity of dark green crude, apparently from the top of the Dakota sands, standing 400 feet in the hole.

In North Turner Valley, Dome Oils' No. 1, Section 24-30-3w5, is drilling and carrying 8¼-inch casing at 5,200 feet and showing heavy oil seepage.

Spooner Oils' No. 3, Section 20-20-3w5, has been definitely abandoned at 3,250 feet. At this depth the drill was still in the Benton shales, indicating a deep and costly well if work were continued. Casing is being pulled. The company has secured 10 acres directly north of Vulcan Oils' No. 1 in Section 13-20-3w5 in exchange for 30,000 shares of Spooner stock; No. 4 will be started immediately on this acreage. Spooner's No. 2, Section 24-20-3w5, is gradually increasing its production, which totaled 1,000 bbls. up to December 15. Spooner's No. 1, LSD 12, Section 13-20-3w5, is cleaning out with diamond drill to restore production.

Drilling in Foothills

On the Waite Valley structure, west of Turner Valley, Richfield Petroleum's No. 1, Section 35-20-3w5, lost derrick and all equipment back to the boiler house by fire, partly covered by insurance. The test is expected to resume early in January at 3,700 feet. It is the deepest test on the Waite Valley structure.

On the Sinclair-Highwood structure, Hudson's Bay Oil & Gas Co.'s Highwood No. 1, LSD 8, Section 1-18-3w5, is drilling at 1,175 feet after changing boilers. The drill is in the Home sands, which indicates getting the lime at comparatively shallow depth unless faulting occurs.

Development Near Lundbreck

The spring will likely see some drilling on the Watson structure in the southern foothills near Lundbreck. Two groups at least will be active in this area. A. E. McCroskey and associates of Los Angeles have taken over approximately 10,000 acres and are planning a thorough test of the structure involving from 5 to 10 wells in the course of 1930. The McCroskey Syndicate holdings include a block formerly controlled by Dr. F. E. Sandercook and C. E. Meadows of Calgary, as well as acreage of the Marjon Oil Co. and the Craig Syndicate of Vancouver. These holdings are north and west of Lundbreck and about 35 miles due south of the Turner Valley Field.

The Watson structure is separate from and some distance north of the Pincher Creek structure, where the results of even deep drilling operations have so far been rather unpromising. The structure was surveyed last summer by Dr. L. Z. Johnson and Dr. Lawrence Putnam who reported on it as one of the two major important anticlines in the foothills section lying between the Bow River west of Calgary and the Old Man River in the Lundbreck district. Their report indicates that in the foothills, metamorphosis of rock change decrease markedly to the south, the reservoir rocks being much more porous in that direction, increasing the probability of crude petroleum.

Raven Oils, Ltd., of Calgary, holds some acreage on the Watson structure with a tentative location for No. 1 well in Section 28-10-2w5. Derrick timbers and some drilling equipment are at Lundbreek and will be moved to location as soon as weather moderates. It is planned to mine steam coal in the vicinity for fuel for the outfit.

Border Fields

In the Red Coulee Field, east of Coutts, Mid-Continent Oil Co.'s No. 1, NE, Section 3-37-4w, is reported at 2,250 feet and drilling within 200 feet of production. The location is on the Montana side about 500 feet south of Vanalta's No. 1 producer.

The Maple Leaf refinery at Coutts is extending its capacity to handle additional production, and it is reported a pipe line will be laid next spring to the Red Coulee Field.

Southern Alberta Exploration Co. is preparing to construct camp and derrick on a location just east of Vanalta's No. 1 producer. It is reported 20 locations have been spotted on the Canadian end, tests to start in the spring; but at present activity is most marked on the Montana end.

In the Skiff Field, east of Coutts, Dauntless Oils' No. 1, LSD 9, Section 36-6-15w4, is reported on production test. Caving above the 30-foot oil sand caused considerable delay and bad weather conditions interfered.

In the Milk River district, Capitol Oil & Gas Co.'s No. 1-A, LSD 16, Section 32-1-12w4, is making some gas and a little oil, but is having trouble shutting off water from the upper levels. Commonwealth Petroleum's No. 1, LSD 9, Section 9-3-15w4, is reported drilling 395 feet in the Madison limestone at 3,145 depth, and about 150 feet off the Devonian. It looks as though the Madison will be unproductive and it is planned to continue the test into the Devonian.

Kinsella Gas Field

In the new Kinsella Field, east-central Alberta, Duluth Syndicate's No. 1 discovery well, LSD 3, Section 29-48-10w4, is reported in control, blowing through a 2-inch vent. The gas flow started around 30,000,000 feet a day, and after blowing wide open for six days showed no diminution. The production is apparently dry gas similar to that of the Viking and Wainwright Fields. The syndicate, which holds 20,000 acres in the Kinsella area, is preparing for further development, and two additional wells will likely be started this winter. Dr. J. A. Allan of the University of Alberta, who geologized the Kinsella structure and located the discovery well, considers that crude oil is likely to be found at greater depth, and it is likely this theory will be tested, either by deepening No. 1 well while taking production or by drilling No. 2 farther down the structure. The location is midway between the Wainwright and Viking Fields and about 10 miles north of Kinsella.

Wainwright Field

In the Wainwright Field, drilling operations have been a little affected by weather conditions, though outfits housed in for winter drilling have been able to continue uninterrupted.

Admiral Oils' No. 1, LSD 16, Section 36-44-7w4, has standard equipment fully rigged up to start drilling into the lime at 2,695 feet. Drilling will continue through the winter. Beaumont Oils' No. 1, LSD 10, Section 10-45-7w4, is reported installing pump and will test the sand at 2,183 feet, with prospects of a 50-bbl. producer. Edalta Oils' No. 1, LSD 15, Section 19-45-6w4, is at 2,183 feet. The sand failed to develop commercial production and the test is waiting for cable tools. Lloyd Petroleum's No. 1, LSD 12, Section 6-45-6w4, is installing boilers and will likely spud in next week.

Oil Selections' Schewchuk No. 1, LSD 13, Section 2-46-7w4, is reported ready to spud in. Wainwell Oils' No. 1, LSD 9, Section 36-44-7w4, is repairing preparatory to a further pumping test. Wainwell's No. 4, LSD 15, same section, is also waiting for a further test. It is believed that with new tubing No. 4 will show increased production. Senator Oil & Gas Development Co.'s No. 1, Section 23-44-6w4, has derrick up.

British-Wainwright Oils' No. 1, LSD 13, Section 20-46-6w4, which was down 2,280 feet, has been cemented back to 2,246 feet to recover production. Wainwright Petroleum's No. 1, LSD 6, Section 30-45-6w4, is at 2,246 feet and cemented on top of an oil sand and will be drilled into production with cable tools. The rotary outfit has been moved to Hargal Oils' B. P. No. 4, LSD 13, Section 20-45-6w4, which is deepening at 2,082 feet.

Peninsular Petroleum's No. 1, LSD 16, Section 30-45-6w4, is reported rigging up and running gas line, and will probably spud in within a few days.

Ribstone Field

In the Ribstone Field, Meridian Oils' No. 2, LSD 1, Section 16-45-1w4, will be drilled in within two weeks.

Oxville Oil & Gas Co.'s No. 1, LSD 15, Section 10-46-2w4, is drilling around 1,800 feet. Some gas was met at 1,200 feet and shows of oil around 1,700 feet.

Saskatchewan

In Saskatchewan, Simpson Oil Co.'s No. 1, Section 9-29-25w2, is shut down for the winter at 2,200 feet after encountering some small shows of oil and gas. It is planned to carry the test several hundred feet deeper in the spring.

Manitoba

In Manitoba, the Dauphin Syndicate's No. 1, SE, Section 14-24-20WPM, is drilling at 992 feet after encountering a show of light crude at 960 feet.

Ontario

In Mosa Township, Middlesex County, Ontario, the Dominion Petroleum Co. has finished a deep test of the Trenton limestone in the Mosa shallow pool near Glencoe. The test got the granite around 3,750 feet without a show of oil.

MICHIGAN FIELDS

(Continued from Page 59)

Ravenna well in Chester Township, Ottawa County.

There were 10 wells shut down in the field, 9 in Muskegon and 1 in Laketon Township, while 18 western Michigan wildcats including 10 in Newaygo County also were shut down.

Three small wells, all near the edges of the proven field, were brought in during the week. The largest was Witt & Nelson, Inc.'s No. 4-A on the George Fenner, SW SE, Section 11-10-17, Laketon Township, which had a flow of about 500,000 feet of gas in the lower Traverse and 25 to 50 bbls. of oil from the upper and lower Traverse with a little water. The well was about 1,900 feet deep.

The Section Ten Syndicate's No. 1 J. J. Fagan, SE SW, Section 10-10-16, Muskegon Township, on the Muskegon River flats, filled up about 1,400 feet with oil from the lower Traverse in which 13 feet of pay sand was struck from 1,885-98 feet. The well is to be swabbed and pumped and is estimated good for 25 bbls. a day.

The Van Buren Development Co.'s No. 1 Hubbel-Bascom-Leahy, SE SW, Section 3-10-16, Muskegon Township, more than a mile east of the proven field, is a very small well in the Dundee with pay sands at 2,082-84 feet. It swabbed about 15 bbls. in several days and is estimated good for 5 bbls. a day.

Two wells were nearing completion in the Dundee, the Joliet-Morris Development Co.'s No. 1 John B. Nichols, NE NW, Section 8-10-16, Muskegon Township, had a flow of gas at 2,035 feet, estimated at more than 500,000 feet, and was to be drilled deeper for more gas or oil in the Dundee. The Jewell Oil & Gas Co.'s No. 1 William DeLong, NE SE, Section 12-10-17, Laketon Township, on the Bear Lake flats, also is being completed after running casing above the Dundee at 2,014 feet.

The Continental Gas & Oil Co. is planning to drill No. 20 on the City of Michigan lease, SE SW, Section 22-10-16, Muskegon Township. The new well will be 300 feet south of No. 17 in the northeast corner of the 155-acre city lease.

Average daily production of three Michigan oil fields dropped below 15,000 bbls. last week for the first time in several months. The decline was general for all fields and all pay sands except the Traverse at Muskegon which held fairly steady. Mount Pleasant production led the State with 7,450 bbls. a day including 7,350 bbls. of Dundee and 100 bbls. of Traverse crude. Muskegon was second with 500 bbls. a day less including 6,525 bbls. a day of Dundee and 425 bbls. of Traverse crude. Saginaw dropped to 210 bbls. from 240 bbls. last week. The drop for the State was more than 1,000 bbls. a day from 15,524 to 14,510 bbls. per day.

EAST CENTRAL TEXAS

(Continued from Page 48)

west of the Van Pool. Four miles east of Grand Saline Moore and Reid's No. 1 H. L. Robinson in the J. B. Y'Barbo Survey, 915 feet from the west and 300 feet from the south of the Robinson 90.15-acre tract will be an interesting test for the northeast corner of the county. A derrick is up on this location and the well will be spudded about January 1, or shortly thereafter.

Six miles southwest of Van W. B. Powell and others' No. 1 W. J. Bailey, 905 feet from the south and 150 feet from the east lines of the 51-acre tract, will also be an interesting test in this direction. This is the fourth test to be located within a radius of a few miles, and this immediate area should be well tested if all four wells are drilled.

Another test southeast of Canton is Thornton & Taubert's No. 1 Everett, located 350 varas from the northwest and 600 varas from the southwest lines of the survey. A vara equals 33.38 inches. This test is about ready to be spudded with a rotary. It is approximately 4½ miles southeast of the above mentioned town.

T. G. Shaw and others' No. 1 Huddle, southwest of the Van Pool on the L. Richardson Survey, is rigging up a rotary. Derrick blew down a week ago and had to be rebuilt.

The East Texas Oil Corp.'s No. 1 Kadane in the McFadden Survey, Smith County, is still shut down at 1,160 feet. This is just over the line from Van Zandt County, about 4 miles northeast of the Van Pool.

Last week the discovery well of the Van Pool, Pure Oil Co.'s No. 1 Jarman went off of production, but circulating oil in the hole revived the well, and the 24-hours' gauge, ending 7 a. m. Dec. 28, showed it producing 1,030 bbls. through a 2 3/64-inch choke. It was previously choked to a ⅞-inch choke. Pure's No. 1 Thompson gauged 1,672 bbls., Shell Petroleum Corp.'s No. 1 Tunnell produced 1,798 and its No. 2 Tunnell produced 1,797 bbls. during the last 24 hours ending this morning.

High Royalty Prices

Two high-priced royalty purchases were reported in the Van area during the past week, one of them being on 10 acres 2 miles northeast of the discovery well. C. E. Dillworth, a Gonzales, Tex., banker was announced as having paid $750 per acre for the above amount. The acreage is in the southeast part of the McKenzie 114-acre tract. The other purchase was made by the Ohio Fuel Oil Co. from Broderick & Calvert, independent operators of Ft. Worth. This contract was made on a one-thirty-second royalty under the H. P. Tunnell farm in

the James Rose Survey, the price reported as $850 per acre base.

Boggy Creek

At Boggy Creek, Anderson County, Humble Oil & Refining Co.'s No. 1-B Todd, southeast flank, has 1,800 feet of oil and 190 feet of salt water standing in the hole from sandy shale at 3,681 feet and is running tubing. The same company's No. 2 Gauger, south side semi-wildcat, tested dry gas at 3,597 feet estimated at 2,000,000 feet daily. No. 5 Earle & Ragsdal on the Cherokee County side of the dome is drilling sandy shale at 1,466 feet. Nos. 4-A Jones, No. 1 Gammill and No. 1 Cook are standing rigged up.

On the Posey Saline, Anderson County, Humble's No. 1 Birdwell is in sandy shale at 3,962 feet and is reaming.

In Freestone County, Haley & Young's No. 1 Knight is swabbing salt water with a showing of oil at 4,806 feet. In the same county Killam & Phillips have rigged up for their No. 1 fee, a wildcat in the Sanchez Survey.

In Limestone County several new tests are starting. Heeman & Maley's No. 1 Wilkes estate spudded during the week and now is in shale at 520 feet, where it is trying to set a string of casing to stop a caving hole. Jensen & Baggett's No. 2 Powell, 75 feet northwest of No. 1, which was abandoned recently, is drilling shale at 271 feet. Moss & Urshall's No. 1-C Freeman is drilling shale and sand at 979 feet. Ursey and associates' No. 1 Zeph Anghn is spudding and C. F. Lytle's No. 4 Thompson has spudded and set surface casing at 60 feet.

Haskell & Brooks' No. 1 Morrow, Navarro County, still is waiting pumping equipment. It is in the Edwards lime at 3,208 feet and has fluid standing in the hole. Lee and associates have rigged up for No. 1 Vaughn, same county.

Killam & Phillips' No. 1 Scramalde, Robertson County, is shut down at 1,746 feet. Magnolia Petroleum Co.'s No. 1 Duran, Lollar Survey, Rusk County, has been abandoned in shale and lime. A. M. Wilborn's No. 1 Hudspeth, Upshur County, is drilling broken shale and lime at 3,881 feet.

EAST CENTRAL TEXAS

Boggy Creek	3,310
Cedar Creek	65
Currie	386
Hill County	40
Mexia	4,779
Minerva	560
Nigger Creek	256
Powell	6,757
Richland	310
Thrall	36
Van	5,878
Wortham	940
Total	23,317
Week ending December 21	21,444
Increase	1,873

KANSAS FIELDS

(Continued from Page 49)

structure and some express the opinion it may find oil in the deeper horizons.

Derby Oil & Refining Co.'s No. 1 Griffin, SE cor. SE SW Section 11-19-2w, McPherson County, south of the Ritz Pool, has been completed for 22,000,000 feet of gas from the chat at 2,889-2,935 feet.

Butler County

Shell Petroleum Corp. and others' No. 1 Harper, SW cor. NE, Section 35-26-3, is a rig going up. Empire Oil & Refining Co.'s No. 90 Koogler, SE cor. SW NE, Section 20-26-5, has been completed for 40 bbls. in sand 2,514-95 feet. No. 91 Koogler, NW cor. NE SW, Section 20-26-5, made 50 bbls. in sand 2,526-2,613 feet. No. 92 Koogler, NW cor. SW NE, Section 20-26-5, has been completed for 305 bbls. in sand 2,460-85 feet. Lario Oil & Gas Co.'s No. 1 Neucomb, SW cor. SE, Section 7-27-4, is dry and abandoned at 3,032 feet. Straub, Dutton and others' No. 1 Kibby, SE cor. SW SW, Section 12-28-3, has been abandoned at 2,983 feet.

Chase County

Urshell and others made location for No. 1 Lipps, C SW SW, Section 27-18-6. Chase County Pipe Line's No. 1 Miller, C SW, Section 21-19-6, is drilling at 475 feet. Steinbuchel and others' No. 1 Cook, NE cor. SW SW, Section 31-19-8, is drilling at 375 feet.

Chautauqua County

Theta Oil Co. staked location for No. 2 Julien, NE cor. SE NW, Section 12-32-10. The Prairie Oil & Gas Co.'s No. 1 White, NE cor. SW, Section 15-34-8, is dry and abandoned at 3,014 feet.

Coffey County

Hinsley and others built the rig for No. 2 Barngrover, SE cor. SW NW, Section 7-23-15. Johnson and others' No. 1 Hazelback, SE cor. NE SW, Section 23-21-13, has been abandoned at 1,868 feet.

Cowley County

Wilson and others' No. 1 Peacock, NW cor. SE, Section 36-32-4, is shut down at 1,435 feet. Shawver and others' No. 1 Oldham, NW cor. SE, Section 23-32-3, has been abandoned at 3,543 feet.

Dickinson County

Morgan and others' No. 1 Whitehair, NW cor. SE, Section 9-12-1, is a rig.

Elk County

Ramsey and others' No. 1 Ferguson, SW cor. SE, Section 3-31-8, is a dry hole at 1,936 feet.

Ellsworth County

The Texas Company's No. 1 Sherman, NE cor. SW, Section 16-17-6w, is a dry hole at 4,042 feet.

Greenwood County

Simmons & Rhodes made location for No. 5 Patterson, NE cor. SW SW, Section 22-23-11. Empire Oil & Refining Co. staked location for No. 5 Patterson "C," SW cor. SE SE, Section 36-23-11. McCulloch and others' No. 1 Gaffney, SW cor. NW NW, Section 12-24-10, is drilling at 300 feet.

McPherson County

E. W. Marland and others made location for No. 1 Krehbiel, NW cor. SW SE, Section 10-21-3w. The Texas Company's No. 1 Stuckey, NW cor. SW SW, Section 10-21-3w, Voshell Pool, is a rig under construction. Sinclair Oil & Gas Co. made location for No. 3 Voshell, NW cor. SW NW, Section 10-21-3w. Mid-Kansas Oil & Gas Co. moved the rig in for No. 1 Pitts, C SW SE, Section 2-19-2w. Perry and others' No. 1 Wade, C SE, Section 20-19-4w, is dry and abandoned at 3,917 feet. Shell Petroleum Corp.'s No. 1 Miller, SW cor. SE, Section 1-20-2w, made 3,245 bbls. in chat 2,964-65 feet. Mid-Kansas Oil & Gas Co.'s No. 1 Voshell, NE cor. NW NE, Section 9-21-3w, swabbed 1,875 bbls. from Wilcox sand 3,274 feet.

Morris County

Urshell and others' No. 1 Scott, NE cor. SW, Section 6-16-6, is drilling at 400 feet. Snyder and others' No. 1 Drumond, C NW SE, Section 21-17-7, is drilling at 670 feet. Arrow Oil & Gas Co.'s No. 1 Kinkle, C NW NE, Section 8-16-7, has been abandoned at 1,470 feet.

Sedgwick County

Wilson and others' rig is up for No. 1 Ottoway, SW cor. NW, Section 16-28-2w. Shell Petroleum Corp.'s No. 2 Borg, NW cor. SW SW, Section 14-26-2, made 264 bbls. in sand 3,352-54 feet. No. 3 Fischer, SW cor. SE SE, Section 15-26-2, Greenwich Pool, made 188 bbls. in sand 3,237 feet. T. C. Johnson's No. 1 Peachy, SW cor. SE SW SW, Section 2-27-1w, is dry and abandoned at 3,519 feet. Moore and others' No. 1 Schulte, NE cor. SE NW, Section 18-28-1w, has been abandoned at 3,682 feet.

LA.-ARK. FIELDS

(Continued from Page 51)

feet, and Standard Oil Co.'s No. 13-B Arnold, Section 26-15-16, pumped 35 bbls. from 2,038 feet.

Bethany gas area of Panola County had two small wells: Ark-La Pipe Line Co.'s No. 10 Werner in the E. S. Mitcheson Survey, 1,210,000 feet of gas at 2,238 feet and Nemours Corp.'s No. 3 G. W. Brumble in the same survey, 1,000,000 feet, total depth 2,345 feet.

Production

Daily average production of the pools during the past week follows:

LOUISIANA

Caddo, light	9,440
Caddo, heavy	2,925
Homer	3,870
Haynesville	4,670
DeSo o-Red River	3,050
Elm Grove	525
Bellevue	610
Cotton Valley	2,280
Urania	5,210
Pleasant Hill	770
Sarepta	885
Zwolle	3,755
Total	37,999

ARKANSAS

El Dorado	4,325
Smackover, light	5,715
Smackover, heavy	41,705
Stephens	1,000
Nevada County	1,115
Lisbon	1,100
Champagnolle	5,560
Bradley	85
Total	60,615
Both states	98,605
Last week	100,790
Decrease	2,185

OKLAHOMA FIELDS

(Continued from Page 48)

cor. NW NW NE, Section 1-2s-10w. Barnsdall Oil Co.'s No. 16 Bills, NE cor. SE NE SW, Section 33-1s-10w, is pumping 10 bbls. from sand 2,139-54 feet. Baldwin & Sultan's No. 6 Rhone, NE cor. SE SE SE, Section 35-1s-10w, made 45 bbls. in sand 2,183-2,202 feet.

Creek County

Pioneer Petroleum Co. moved a machine in for No. 1-A Scott, SE cor. NW, Section 15-19-9. No. 1 Hope, NE cor. SW SW, Section 6-17-9, is spudding. Glenn Cole and others' No. 1 Withers, SE cor. NE SE, Section 1-14-10, is a rig. Phillips Petroleum Co. and others' No. 3 Koch, SW cor. NE NE, Section 20-19-9, made 90 bbls. in sand 2,232-65 feet. H. U. Bartlett's No. 1 Jackson, SW cor. SE SW, Section 23-18-8, has been completed for 1,500,000 feet of gas in sands 2,644-94 feet and 2,795-2,820 feet. E. P. Harwell and others' No. 1 Colvin, NE cor. SW SW SE, Section 31-18-11, made 3,000,000 feet of gas in sand 1,665-68 feet. Pawnee Producing Co.'s No. 5 Johnson, C SE SE, Section 14-17-8, has been completed for a 5-bbl. pumper. A. B. Ice's No. 5 Wanake, NE cor. SE NE SE, Section 19-17-10, made 2 bbls. from sand 620-36 feet. Emerson, Berry & McCoy's No. 1 Brown, NW cor. NE, Section 20-17-10, made 45 bbls. in sand 2,058-2,106 feet. S. J. Mathews' No. 1-A Hughes, NE cor., Section 21-16-11, has been completed for 2,000,000 feet of gas in sand 2,236-47 feet. Wilcox Oil & Gas Co.'s No. 1 Johnson, SW cor. NW SE, Section 6-14-10, is pumping 30 bbls. from Dutcher sand 2,821-26 feet. Jones and others' No. 1 Roberts, NE cor. NW SW, Section 26-13-12, is dry and abandoned at 600 feet. The Prairie Oil & Gas Co.'s No. 2 Sheppard, NE cor. SE NE, Section 35-15-7, has been completed for 50 bbls. in Peru sand 2,618-48 feet.

Greer County

Roy Good and D. M. Dowell's No. 1 Ciffell, NW cor., Section 1-7-22w, has drilled to 200 feet and shut down.

Harmon County

Harmon-Tex Oil Co.'s No. 1 Headly, NE cor., Section 17-4-24w, is fishing at 700 feet.

Hughes County

Mid-Continent Petroleum Corp. made location for No. 1 J. Buck, SW cor. NE NW, Section 28-9-10. Magnolia Petroleum Co. staked location for No. 1 R. Jackson, SE cor. SW NE, Section 17-7-8. Troutt and others' No. 2-A Bird, SW cor. NE NW, Section 5-8-11, has been shut in for 4,500,000 feet of gas in sand 1,579-88 feet. W. B. Pine's No. 1 Davis, NW cor., Section 17-5-8, has been completed for 405 bbls. in Cromwell sand 2,577-2,603 feet. Magnolia Petroleum Co.'s No. 6 Reed, SE cor. SW NW, Section 17-5-8, Allen Pool, has been shut in for 20,000,000 feet of gas in sand 2,820-25 feet.

Jefferson County

Bridwell Oil Co.'s No. 1-C Spring, NE cor. NW SW NW, Section 25-6s-6w, is rigging up rotary.

Johnston County

Smith-Kinsley's No. 1 Lane, SE cor. NW, Section 29-1s-7, is a dry hole at 2,254 feet.

Kiowa County

John C. Head's No. 1 School, CWL NW, Section 22-6-16w, has been abandoned at 600 feet.

Lincoln County

Magnolia Petroleum Co.'s No. 4 Staubus, SW cor. NW SE, Section 8-14-4, is a rig.

Muskogee County

Bement Oil Co.'s No. 1 J. Davis, CSL SE NE, Section 15-13-16, is drilling at 300 feet. Hale & Reynolds moved a machine in for No. 1 Welch, SW cor. NW SE, Section 1-13-18. E. Mills and others' No. 4 C. Jordan, SE cor., Section 14-13-18, is rigging up. L. R. Kershaw's No. 1 Fee, SW cor. SE SE, Section 15-13-18, is drilling at 100 feet.

Okfuskee County

Burke-Greis Oil Co. made location for No. 1 Grayson, NW cor. SE, Section 32-12-10. Producers & Refiners Corp. made location for No. 6 Monarye, NE cor. SE SE, Section 29-12-10. F. A. Havell and others' No. 1 Grayson, SW cor. SE, Section 23-11-11, has been completed for 25 bbls. at 1,644 feet after plugging back from 2,002 feet. Schoenfeldt and others' No. 5 Hawkins, SE cor. NE SW, Section 4-11-12, is dry and abandoned at 1,577 feet. Eagle Picher Lead Co.'s No. 5 French, SE cor. SW NW, Section 17-11-12, made 750,000 feet of gas in sand 2,388-94 feet after it was plugged back from 2,640 feet.

Oklahoma County

Mid-Kansas Oil Co. made location for No. 2 Mollman, NW cor. SE SE, Section 23-11-3w, Oklahoma City Pool. Indian Territory Illuminating Oil Co. and others' No. 2 Werner Farley, SE cor. NE SE, Section 23-11-3w, is a cellar. The cellar has also been dug for No. 1 M. Warden, NW cor. SW, Section 24-11-3w. No. 1 E. Farley is a cellar, SW cor. NW SW, Section 24-11-3w. Coline Oil Co. is digging the cellar for No. 7 Warren, NE cor. SW SW, Section 18-11-2w.

Okmulgee County

J. H. Rebold has dug the cellar for No. 2 B. Scott, NE cor. NW SE, Section 6-15-13. Sheridan Oil Co.'s No. 4 Peters, CNL SE SE, Section 33-16-11, is a dry hole at 2,184 feet. J. H. Rebold's No. 1 Sugar, NW cor. SW, Section 5-15-13, has been abandoned at 2,646 feet. I. M. Levine and others' No. 2 Warner, NW cor. SE NW, Section 24-14-12, made 1,500,000 feet of gas in sand 1,221-65 feet.

Payne County

Pure Oil Co.'s No. 1 Kennedy, NE cor. NW, Section 9-18-5, has been completed for 450 bbls. in sand 3,614-41 feet. Mulberry Oil Co.'s No. 6 Sharrum, SW cor. NW NW, Section 5-17-4, made 628 bbls. in Wilcox sand 4,115-59 feet.

Pontotoc County

Benedum-Trees Oil Co. staked location for No. 1 Homldy, SE cor. SW SW, Section 27-5-5, Bebee area. Texas Pacific Coal & Oil Co.'s No. 2 Hatcher, NE cor. NW NE, Section 30-5-5, is drilling at 2,374 feet. Location has been made for No. 2 Bullard, NW cor. SE NW, Section 31-5-5. Homaokla Oil Co. moved a machine in for No. 1 Busby, NE cor. NW, Section 3-4-8. Dixie Oil Co.'s No. 1 Cotton, SE cor., Section 13-5-4, made a 40-bbl. well after plugging back to 2,512 feet from 2,631 feet. Empire Oil & Refining Co.'s No. 4 Norris, NE cor. SE NW, Section 19-5-5, pumped 45 bbls. from 2,607 feet. American Oil & Refining Co.'s No. 4 Robertson, SW cor. SE, Section 19-5-5, drilled to 2,460 feet plugged back to 2,415 feet and pumped 60 bbls. Benedum-Trees Oil Co.'s No. 2 Lowery, NW cor. SE NE, Section 31-5-5, has been completed for 100 bbls. in Viola lime 2,499-2,628 feet. Dixie Oil Co.'s No. 1 Haynes, NW cor. SW, Section 32-5-5, swabbed 144 bbls. from Viola lime 2,454-2,616 feet. Universal Oil Co.'s No. 3 Crueger, NW cor. SE SW, Section 25-5-6, has been completed for 8,000,000 feet of gas in sand 1,990-94 feet.

Pottawatomie County

McEwen & Walker's No. 1 Townsite, Block 25, SE cor. SW NW, Section 8-9-5, Earlsboro Pool, is a rig under construction. Anderson and others moved the rig in for No. 1 Strain, NW cor. NE, Section 17-9-5. Gypsy Oil Co. has the rig on the ground for No. 1 Duvall, NW cor. SW, Section 3-7-4, North St. Louis

Field. Mid-Continent Petroleum Corp. made location for No. 1 McGee, SW cor. NW, Section 3-7-4. Pure Oil Co. staked location for No. 2 Duvall, NE cor. SE, Section 4-7-4. Twin State Oil Co.'s No. 1 Norma, SE cor. SW NW, Section 4-7-4, is a rig on the ground. Sinclair Oil & Gas Co. moved the rig in for No. 2 Morgan, NE cor. NW SW, Section 4-7-4. The rig is on the ground for No. 1 Curley, SW cor. NW NE, Section 22-7-4, by the Twin State Oil Co. Magnolia Petroleum Co. made location for No. 5 Billington, NW cor. NE NW, Section 22-7-4. No. 3 Hilton, SW cor. NW NW, Section 22-7-4, is also a location.

Shell Petroleum Corp.'s No. 3 Jordan, SW cor. SE NW, Section 9-8-5, Maud Pool, has been completed for 680 bbls. in Hunton lime 4,183-88 feet. No. 4 Jordan, SE cor. SW NW, Section 9-8-5, made 367 bbls. in Hunton lime 4,031-36 feet. Gypsy Oil Co.'s No. 1 Johnson, SE cor. NE NW, Section 7-7-4, Pearson area, made 250 bbls. at 4,050 feet after plugging back from 4,567 feet. Magnolia Petroleum Co.'s No. 1 Wilamette, NE cor., Section 11-7-4, drilled to 4,313 feet in Wilcox sand and plugged back to 3,880 feet where it swabbed 25 bbls.

Seminole County

Gypsy Oil Co. made location for No. 3 W. Harjo, SW cor. NW SE, Section 18-9-7, East Seminole Pool. Continental Oil Co. and Sinclair Oil & Gas Co.'s No. 4 Perry, NW cor. SE SW, Section 18-9-7, is a rig. Carter Oil Co. moved the rig in for No. 5 Chowning, SW cor., Section 19-9-6, East Earlsboro Pool. No. 13 M. Killing, C N half NW, Section 23-9-6, is a rig on the ground. Gypsy Oil Co. made location for No. 1 Caroline, SW cor. SE NE, Section 13-7-6, Little River Pool. Magnolia Petroleum Co. staked location for No. 2 Coker, SE cor. SW SE, Section 13-7-6. Gypsy Oil Co.'s No. 3 Willie, NE cor. NW NE, Section 24-7-6, is a cellar. No. 4 Willie, SE cor. NW NE, Section 24-7-6, is also a cellar. Magnolia Petroleum Co.'s No. 2 Cudjo, NW cor. NE NE, Section 24-7-6, is setting surface pipe. No. 3 Cudjo, SW cor. NE NE, Section 24-7-6, is a location. Indian Territory Illuminating Oil Co. made location for No. 1 Johnson, NW cor. SE NE, Section 24-7-6. Magnolia Petroleum Co. made location for No. 3 Brame, SW cor. NE NE, Section 8-7-7, East Little River Pool. Mid-Continent Petroleum Corp. moved the rig in for No. 3 Yarhola, NE cor. SW NE, Section 8-7-7. Producers & Refiners Corp. made location for No. 2 Davis, SE cor. SW NE, Section 13-7-6. Location was staked for No. 3 Davis, SW cor. NE, Section 13-7-6. The Prairie Oil & Gas Co. and T. B. Slick made location for No. 2 Kouri, SW cor. SE SE, Section 13-7-6. Mid-Continent Petroleum Corp.'s No. 1 Harjoche, SE cor. NW SE, Section 8-6-6, is a location. Champlin Oil & Refining Co. and Shell Petroleum Corp.'s No. 1 Sachemeche, NW cor. SW SW, Section 9-6-6, is a rig under construction. Sinclair Oil & Gas Co. made location for No. 2 I. Davis "B," NE cor. W, Section 7-6-8, Sasakwa Pool. Carter Oil Co. moved the rig in for No. 3 Spillman, SW cor. NW SW, Section 7-6-8. Magnolia Petroleum Co. made location for No. 4 Reed, NE cor. SW, Section 13-5-7, West Allen Pool.

Minnehoma Oil Co.'s No. 3 Noe, NW cor., Section 17-9-6, East Earlsboro Pool, had Wilcox sand 4,200-25 feet and made 2,854 bbls. Burke-Greis Oil Co.'s No. 4 Fixico, SE cor. SW SW, Section 17-9-6, has been completed for 65 bbls. at 4,257 feet after plugging back 4 feet. The Prairie Oil & Gas Co.'s No. 4 Calkins, SE cor. NW SW, Section 17-9-6, is dry and abandoned at 4,288 feet. Gypsy Oil Co.'s No. 1 D. Fixico, SW cor. NW NE, Section 26-9-6, an old well originally completed at 4,161 feet has been plugged back to 3,981 feet and made 45 bbls. Sinclair Oil & Gas Co.'s No. 2 Thompson "B," SE cor. NE SW, Section 18-9-7, made 705 bbls. from Wilcox sand 4,203-15 feet. Ligon and others' No. 1 Ligon, NW cor. SE, Section 25-8-7, made 35 bbls. in sand 3,228-36 feet. The Prairie Oil & Gas Co.'s No. 1 Abel, SW cor. NE SW, Section 10-9-8, was deepened to 3,493 feet and is abandoned. Hoffman and others' No. 1 Tecumseh, SE cor. SW, Section 24-5-5, Bebee area, has been completed for 17 bbls. at 2,825 feet after plugging back from 3,047 feet. Indian Territory Illuminating Oil Co.'s No. 2 Mathis, NW cor. SW, Section 13-5-7, made 420 bbls. from Wilcox sand 4,302-14 feet. The Texas Company's No. 3 Jefferson, NW cor. SE SE, Section 23-5-7, West Allen Pool, made 65,000,000 feet of gas from sand 4,020 feet. Mid-Continent Petroleum Corp.'s No. 16 Fleet, SW cor. SE SE, Section 7-5-8, Allen Pool, has been completed for 50 bbls. from Simpson and Wilcox sands at 4,170 feet after plugging back from 4,220 feet. Sinclair Oil & Gas Co. and Kingwood Oil Co.'s No. 1 Price, SE cor. NW, Section 13-6-7, is dry and abandoned at 4,518 feet. Carter Oil Co.'s No. 2 Spillman, NW cor. SW SW, Section 7-6-8, has been completed for 985 bbls. in Wilcox sand 4,185-89 feet. Sinclair Oil & Gas Co.'s No. 5 I. Davis "A," NW cor. SE, Section 7-6-8, made 65 bbls. at 2,937 feet, after plugging back from 4,292 feet. No. 6 I. Davis "A," NE cor. NW SE, Section 7-6-8, drilled to 4,322 feet, plugged back to 2,905 feet and made 5,000,000 feet of gas.

Stephens County

George Pace and others' No. 5 Bristowe, NW cor. SW NW SW, Section 18-2s-7w, has drilled to 800 feet and shut down.

Tulsa County

Bryan Petroleum Co. moved a machine in for No. 1-A Rothammer, SE cor. SW SW, Section 1-16-15. W. E. Brown and others' No. 4-A Oswald, CWL SE NW, Section 6-17-13, made 12 bbls. in sands 1,307-50 feet and 1,430-45 feet.

Wagoner County

Hale-Ford Oil Co.'s No. 5 J. Brown, SW cor. SE NW, Section 36-16-17, is a machine. C. W. Gillett's No. 7 McIntosh, CEL NW SE, Section 25-17-16, made 6 bbls. in sand 1,297-1,312 feet.

PRODUCTION OF SEMINOLE POOL

Average daily production of the Seminole area for the week ending December 24:

Little River Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Nitey	2-7-6	3	272
Amerada-Wilcox:			
Fore	35-8-6	2	352
Barnsdall:			
Cotcha	23-7-6	3	316
Hotulka	22-7-6	3	306
Walker	4-7-6	1	10
Blackwell:			
Baker	11-7-6	5	421
Nitey	35-8-6	5	116
Talley	14-7-6	4	624
Thomas	11-7-6	1	Off
Bryan-Emery:			
Carter	4-7-6	1	13
Carter:			
Cotcha	23-7-6	3	91
Alec	23-7-6	2	94
Cudjo	23-7-6	2	97
Factor	26-7-6	1	34
Fish	36-8-6	3	181
Harjo, C.	11-7-6	3	1,441
Harjo, M.	13-7-6	4	172
Jackson	11-7-6	4	834
Larney, B.	26-7-6	2	235
Larney, J.	24-7-6	4	740
Lena	10-7-6	1	250
Moore	11-7-6	2	77
Tewee	14-7-6	6	517
Thomas, M.	11-7-6	1	181
Walker	24-7-6	1	1,185
Wilson	12-7-6	1	110
Champlin:			
Tewee	14-7-6	3	491
Continental:			
Cosar	36-8-6	7	790
Cosar, M.	25-8-6	1	160
Milsey	11-7-6	2	245
Empire:			
Charty	24-7-6	1	44
Coker	13-7-6	2	312
Cotcha	27-7-6	2	12
Sandlin	3-7-6	1	11
Gypsy:			
Brown, C.	33-8-6	1	162
Brown, M.	33-8-6	1	99
Campbell	36-8-6	1	7
Conard	22-7-6	2	79
Cosar, W.	36-8-6	2	122
Cotcha	23-7-6	13	1,049
Denmark	11-7-6	3	407
Hulhoke	14-7-6	10	907
Nungee	1-7-6	1	Off
Patty	36-8-6	4	260
Renton	11-7-6	4	935
Independent:			
Carpenter	27-7-6	3	186
Davis, R.	13-7-6	7	434
Tewee	14-7-6	6	693
Williams	15-7-6	1	1,283
Garris	23-7-6	13	361
Independent et al:			
Davis	2-7-6	5	861
Reed	26-7-6	1	5
I. T. I. O.:			
Campbell	1-7-6	1	198
Dungan	35-8-6	3	181
House, M. A.	1-7-6	1	23
House, W. E.	1-7-6	1	13
House, W. E. "B"	2-7-6	4	401
Hull	22-8-6	2	259
Jackson	1-7-6	3	169
McCulla	1-7-6	2	605
Nitey	2-7-6	5	97
Phoebe "A"	35-8-6	1	12
Phoebe "B"	35-8-6	2	61
Soketeche	1-7-6	3	59
Magnolia:			
Cruse	33-7-6	4	492
Denby	11-7-6	4	158
Harjo "A"	14-7-6	2	40
Harjo "B"	14-7-6	2	113
Patty	35-8-6	4	53
Reed	22-7-6	3	250
Mid-Continent:			
Bruner	11-7-6	4	90
Eleck	23-7-6	1	10
Wadsworth	36-8-7	4	37
Pine:			
Bean	13-7-6	2	360
Hoyecha	26-8-6	7	810
Pine-Phillips:			
Patty	33-8-6	1	45
Prairie:			
Chilcoat	25-8-6	3	329
Coker	1-7-6	2	249
Gibson	14-7-6	5	640
Harris	14-7-6	4	591
House	2-7-6	4	80
Reed	13-7-6	2	411
Talley	14-7-6	5	455
Williams	15-7-6	2	113
Wood	26-7-6	3	96
Prairie-Amerada:			
Sunny	14-7-6	5	879
Prairie-Slick:			
Cudjo	26-7-6	4	413
Prod. & Ref.:			
Davis	13-7-6	1	601
Dungan	36-8-6	1	Off
Johnson	24-7-6	2	609
Moppin	24-7-6	2	126
Pure:			
Brinson	24-7-6	3	585
Cotcha	23-7-6	11	2,004
Harjo	11-7-6	4	599
Hollins	11-7-6	1	286
Reiter-Foster:			
Bunyard	14-7-6	2	246
Ritter	31-7-6	1	6
Shaffer:			
McCan	33-7-6	1	40
Narcome	26-7-6	2	Off
Shell:			
Caesar	11-7-6	1	74
Glass	26-7-6	1	9
Hotulka	23-7-6	5	569
Johnson	13-7-6	4	484
Sinclair:			
Blanton	11-7-6	1	222
Cosar	36-8-6	3	430
Haney	12-7-6	1	4
Tewee	14-7-6	2	686
Pompey	24-7-6	1	153
Skelly:			
Carl	14-7-6	2	1,128
Snowden-McSweeney:			
Tiger	13-7-6	2	40
Superior:			
Pulutka	31-8-6	1	2
Texas:			
Brooks	25-8-6	1	7
Coker	1-7-6	3	2
Janey	11-7-6	6	65
Texas-Independent:			
Hotulka	23-7-6	7	870
Hotulka, H.	22-7-6	2	120
Tidal:			
House	1-7-6	1	306
Johnson	1-7-6	1	1
Twin State:			
Lowe	25-8-6	1	22
Total		347	38,555

East Little River Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Chilcoat	4-7-7	1	996
Continental et al:			
Harrison	4-7-7	5	1,420
Gypsy:			
Payne	5-7-7	6	1,841
Walker	5-7-7	3	1,196
Magnolia:			
Reed	31-8-7	1	25
Brame	8-7-7	2	1,325
Wolf	20-8-7	1	5
Scikio	4-7-7	1	3
McCulloch et al:			
Harrison	4-7-7	1	Off
Mid-Continent:			
Smith	5-7-7	13	5,440
Yarhola	9-7-7	1	1,200
Prairie:			
Smith	5-7-7	3	2,403
Prairie-Slick:			
Carr	9-7-7	1	36
Prod. & Ref.:			
Lusty	5-7-7	1	10
Sakteke	9-7-7	1	8
Thomas	5-7-7	2	559
Sinclair:			
Phillips	5-7-7	8	6,020
Texas:			
Chilcoat	4-7-7	2	930
Total		53	23,417

Carr City Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Reed	13-8-5	1	Off
Barnsdall:			
Coker	11-8-5	9	1,072
Fife	14-8-5	2	85
Barnsdall et al:			
Tulley	10-8-5	1	100
Carter:			
Coker	2-8-5	2	1,275
Rogers	2-8-5	1	2,573
Empire:			
Cluck	11-8-5	13	2,297
Gypsy:			
Coker	10-8-5	1	Off
Coker, C.	2-8-5	1	616
Fife	14-8-5	1	Off
I. T. I. O.:			
Simpson	10-8-5	1	Off
Tulley	10-8-5	1	8
Magnolia:			
Fee	11-8-5	3	189
Killings	14-8-5	1	2
Prairie:			
Billington	11-8-5	10	683
Mitchell	15-8-5	1	58
Sinclair:			
Bean	11-8-5	5	594
Harjo, L.	11-8-5	4	285
Total		57	9,827

Maud Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Ballard	1-8-4	1	43
Fehlig	7-8-5	1	37
Gossland	8-8-5	3	45
Gravel	1-8-4	1	8
Hallum	1-8-4	4	1,048
Smith	8-8-5	1	181
Amerada-Barnsdall:			
Wallace	17-8-5	4	167
Amerada-Hull:			
Green	20-8-5	3	58
Continental-Shell:			
Everett	18-8-5	2	20
Empire:			
Smith	8-8-5	2	378
Gypsy:			
Bourassa	7-8-5	4	48
Gossland	9-8-5	2	629
Miller	18-8-5	8	186
Independent:			
Harding	18-8-5	4	131
I. T. I. O.:			
State Land	16-8-5	1	63
Laurel O. & G.:			
Billington	18-8-5	3	78
Magnolia:			
Billington	1-8-5	4	64
Green	20-8-5	3	43
Magnolia-Gypsy:			
Smith	20-8-5	1	42
McMan:			
Roberts	9-8-5	1	313
Mid-Continent:			
Shelton	18-8-5	3	14
Phillips:			
Hudson	19-8-5	3	97
Wallace	7-8-5	2	17
Pine:			
Lingerfelt	18-8-5	2	133
Smith	8-8-5	2	235
Prairie:			
Campbell	18-8-5	8	94
Jordan	9-8-5	1	20
Prairie et al:			
Villines	20-8-5	1	2
Pure:			
Lindley	18-8-5	8	148
Urbanskey	19-8-5	2	25
Wiley	8-8-5	4	552
Shell:			
Jordon	9-8-5	2	1,435
Sinclair:			
Bellars	19-8-5	10	496
Calvin	7-8-5	3	126
Lewis	6-8-5	2	34
Smith	9-8-5	1	147
Skelly-Lenox:			
Green	20-8-5	1	109
Skelly-Margay:			
Lingerfelt	18-8-5	4	110
Texas:			
Calvin	7-8-5	9	150
Tidal:			
Dunn	12-8-4	1	30
Everetts	18-8-5	2	32
Smith	8-8-5	1	40
Twin State:			
Colvin	7-8-5	2	70
Wilcox O. & G.:			
Smith	8-8-5	8	521
Total		137	8,219

Mission Pool

Company, farm—	Location	Wells	Prod.
Amerada:			
Rice	5-8-6	2	319
Carter:			
Fuswa	18-8-6	3	515
Micco	8-8-6	2	125
Carter-Denver P. & R.:			
Melissa	9-8-6	1	322
Continental:			
Maines	7-8-6	1	780
Darby:			
Judy	1-8-5	1	50
Gypsy:			
Baby	6-8-6	1	15
Barkus, N.	6-8-6	10	1,322
Barkus, S.	7-8-6	1	13
Dosar	7-8-6	5	611
Hardy	7-8-6	5	258
Harjoche	7-8-6	3	5
Micco, L.	8-8-6	2	25
Mission	5-8-6	7	1,106
Mosar	1-8-5	4	330
Independent:			
Lawson	1-8-5	5	600
Independent-Kistler:			
Payne	7-8-6	3	575
McMahon:			
Harjo	7-8-6	2	620
Mid-Continent:			
Ripley	13-8-5	1	141
Minnehoma:			
Neal	7-8-6	4	375
Pine, W. B.:			
Harjo	6-8-6	3	940
Micco	8-8-6	1	25
Prairie:			
Crain	7-8-6	1	43
Melton	6-8-6	3	549
Micco	5-8-6	1	3
Townsend	6-8-6	2	366
Prairie-Gypsy:			
Owens	18-8-6	2	71
Prairie-Slick:			
Nelly	12-8-5	1	121
Shaffer:			
Weaver	12-8-5	3	730
Shell-Continental:			
Hearndon	7-8-6	3	599
Shell-Papoose:			
Maines	7-8-6	8	835
Sinclair:			
Hardy	7-8-6	4	571
Judy	1-8-5	1	25
Tidal:			
Nellie	12-8-5	5	1,326

Company, farm—	Location	Wells	Prod.
Twin State:			
Hayes	8-8-6	2	730
Judy	6-8-6	2	4
Ripley	12-8-5	2	40
Total		110	15,135
Bowlegs Pool			
Amerada:			
Rascoe	15-8-6	6	470
Atlantic:			
Baker	10-8-6	4	186
Fleet	23-8-6	3	80
Grayson	13-8-6	3	381
Jones "A"	16-8-6	2	15
Jones "C"	9-8-6	1	Off
Barnsdall:			
McNac	28-8-6	1	12
Morrow	11-8-6	4	180
Carter:			
Bowlegs, I.	15-8-6	4	237
Burden	23-8-6	2	160
Harjoche	14-8-6	6	316
Hilly, D.	23-8-6	3	170
Jones	11-8-6	4	337
Walker	15-8-6	4	239
Wise	23-8-6	11	882
Dixie:			
Lizzy	11-8-6	1	5
Empire:			
Lacey	14-8-6	6	179
Wise	23-8-6	2	96
Gypsy:			
Cumsey	10-8-6	4	320
Grayson	13-8-6	4	320
Harjoche	10-8-6	3	237
Jones	11-8-6	1	27
Walker	15-8-6	7	807
Wise	23-8-6	2	99
I. T. I. O.:			
Barnett	24-8-6	1	42
Barnett "B"	23-8-6	1	12
Billington	22-8-6	3	279
Bowlegs	22-8-6	9	1,093
Davis	13-8-6	4	35
Fay	13-8-6	9	705
Goforth	15-8-6	12	830
Livingston	15-8-6	10	940
Lizzie	11-8-6	3	389
Walker	15-8-6	8	747
Williams	12-8-6	1	139
Wilmot	15-8-6	4	360
Work	24-8-6	1	47
Youngblood	24-8-6	1	Off
Magnolia:			
Davis, B. F.	13-8-6	3	153
Davis, M.	13-8-6	1	53
Hammond	10-8-6	8	332
Rhodes	12-8-6	5	229
Vanburskirk	9-8-6	4	232
McCulloch:			
Bowlegs	22-8-6	1	18
Mid-Continent:			
Baker	10-8-6	4	134
Smith	12-8-6	6	416
Minnehoma:			
Bowlegs	15-8-6	1	16
Prairie:			
Gahagan	23-8-6	3	122
Harber	10-8-6	8	892
Jones, G.	11-8-6	3	151
Jones, N.	3-8-6	1	132
Templeton	12-8-6	4	1,306
Whitney	23-8-6	4	181
Pure:			
Reed	14-8-6	14	1,447
Strothers "D"	14-8-6	4	243
Strothers "F"	10-8-6	7	1,177
Shaffer:			
Lacey	14-8-6	3	308
Shell-Houston:			
Taylor	16-8-6	5	Off
Sinclair:			
Cumsey	10-8-6	4	650
Ellen	11-8-6	5	390
Harjo	14-8-6	3	285
Jones	9-8-6	7	170
Taylor, M.	10-8-6	4	589
Taylor, W.	10-8-6	3	362
Walker, I.	22-8-6	4	665
Texas:			
Reed	14-8-6	11	30
Tidal:			
Grayson	13-8-6	4	406
Harjoche	10-8-6	6	827
Total		294	23,289
Earlsboro Pool			
Amerada:			
Anderson	15- 9-5	1	137
Cowden	4- 9-5	7	714
Rogers	3- 9-5	2	55
Atlantic-Sinclair:			
Foreman	18- 9-5	1	Off
Barnsdall:			
Brown	10- 9-5	3	662
Bruner, F.	2- 9-5	2	110
Bruner, N.	10- 9-5	1	126
Cudjo	14- 9-5	1	19
Davis, D.	11- 9-5	3	80
Davis, J.	11- 9-5	4	362
Davis, M.	11- 9-5	2	19
Gibson	9- 9-5	7	443
Hern	15- 9-5	1	Off
Ingram, J.	1- 9-5	6	225
Pack, S.	10- 9-5	4	40
Peter	10- 9-5	3	31
Sango	1- 9-5	2	598
Sobolka	15- 9-5	1	103
Sullivan	15- 9-5	1	2
Sull-Harjo	10- 9-5	2	11
Watsutka	12- 9-5	3	310
Burke-Greis:			
Wisener	6- 9-6	2	161
Burke-Red Bank:			
Mayes	1- 9-5	3	1,336
Carter:			
Cox	31-10-6	1	77
Davis, S.	13- 9-5	3	42
Gilliam	13- 9-5	2	686
James, A.	6- 9-6	3	928
Shepherd	6- 9-6	2	164
Continental:			
Kayes	2- 9-5	2	70
Spencer	12- 9-5	4	362
Cosden:			
Anderson	13- 9-5	2	771
Sarber	13- 9-5	1	33
Empire:			
Barker	12- 9-5	1	26
Edmundson	3- 9-5	2	29
Empire-Amerada:			
Bullock, W.	8- 9-5	2	480
Henry	8- 9-5	1	1,039
Empire-Continental:			
Anderson	13- 9-5	2	178
Empire-Gypsy:			
Keys	6- 9-5	1	19
Gypsy:			
Bruner	10- 9-5	4	819
Carter, B.	11- 9-5	7	1,007
Earl	16- 9-5	1	12
Hunick	5- 9-5	2	793
Noble	12- 9-5	3	359
Peter	10- 9-5	1	55
Sango	1- 9-5	11	1,306
State	16- 9-5	2	122
Wisener	13- 9-5	1	54
Healdton et al:			
Reade	2- 9-5	1	767
Independent:			
Bruner	10- 9-5	3	66
Sullivan	10- 9-5	1	10
Independent-Darby:			
Knapp	8- 9-5	2	360
Independent-Margay:			
Gaines	11- 9-5	3	75
Easton Oil Co.:			
Block 1, Earlsboro	8- 9-5	1	152
Magnolia:			
Bryant	9- 9-5	5	38
Cowden	4- 9-5	1	Off
Dixon	4- 9-5	1	2
Dixon	12- 9-5	1	14
Edmundson	3- 9-5	1	3
Germany, M.	30- 9-5	1	6
Gillian	13- 9-5	3	1,473
Homsley	11- 9-5	6	7
Hyde	13- 9-5	2	9
Ingram	10- 9-5	1	5
Lena	10- 9-5	3	40
Seay	12- 9-6	9	261
Simpson	10- 9-5	4	224
Sparks	11- 9-5	6	88
Sullivan	12- 9-5	2	114
Mid-Continent:			
McKinley	9- 9-5	3	22
Rogers	5- 9-5	5	276
Mid-Kansas:			
Anderson	14- 9-5	1	30
Phillips:			
Dunaway	14- 9-5	1	17
Reade	8- 9-5	2	791
Prairie:			
Davis	13- 9-5	3	305
Graham, C.	3- 9-5	1	1
Graham, O.	10- 9-5	4	520
Stidham	11- 9-5	9	190
Prairie-Skelly:			
Campbell	6- 9-6	7	1,361
Prairie-Whitney:			
Harjo	24- 9-5	1	Off
Shaffer:			
Clark	1- 9-5	2	165
Shell:			
Bayless	17- 9-5	1	9
Hearn	13- 9-5	1	Off
Spencer	12- 9-5	2	274
Sinclair:			
Alexander	36-10-5	1	546
Foreman	18- 9-5	1	12
Sango	2- 9-5	4	305
Forman	18- 9-5	1	96
Skelly:			
Mayes	1- 9-5	4	299
Sheppard	6- 9-6	4	806
Spencer	12- 9-5	1	175
Skelly-Atlantic:			
Cherry	6- 9-6	4	247
Lottie	6- 9-6	3	239
Skelly-Prairie:			
Varnum	5- 9-6	2	143
Superior:			
Ingram	1- 9-5	2	572
Songster	8- 9-5	2	979
Walker	2- 9-5	2	533
Superior-Shaffer:			
McKey	36-10-5	1	149
Texas:			
Anderson	2- 9-5	8	100
Brown	10- 9-5	8	65
James	6- 9-6	2	125
Rogers	5- 9-5	5	26
Wilmot	10- 9-5	6	67
Tidal:			
Walker	35-10-5	2	1,016
Watkins	9- 9-5	7	948
Twin State:			
Anderson	22- 9-5	1	6
Barker	12- 9-5	2	38
Hearn	2- 9-5	2	40
Magruder	7- 9-5	1	486
Total		287	30,662
East Earlsboro Pool			
Amerada:			
Scott	19-9-6	1	2,518
Sullivan	17-9-6	2	2,266
Fullerton	19-9-6	1	Off
Barnsdall:			
Gilliam	13-9-5	1	99
Noble	18-9-6	4	435
Continental:			
McGuire	24-9-5	1	Off
Burke-Greis and Red Bank:			
Jones	17-9-6	3	1,135
Carter:			
Harber	7-9-6	3	37
Wrightsman	19-9-6	4	1,317
Campbell	20-9-6	1	Off
Gypsy:			
Noble, B.	18-9-6	2	1,355
Gypsy-Devonian:			
Payne	18-9-6	10	5,864
Independent:			
Fixico	20-9-6	1	Off
Magnolia:			
Anderson, A.	18-9-6	12	3,576
Anderson, D. W.	18-9-6	4	1,806
Moore	24-9-5	2	607
Panos	18-9-6	1	145
Minnehoma:			
Noe	17-9-6	4	3,222
Mid-Continent:			
McDaniels	7-9-6	1	210
Prairie:			
Baker	24-9-5	5	471
Calkins	17-9-6	3	1,534
Raitman	18-9-6	3	1,776
Wisner	18-9-6	1	10
Producers & Refiners:			
Jefferson	19-9-6	2	Off
Sinclair:			
Miller	24-9-5	1	408
Nichols	19-9-6	4	2,113
Shell:			
Hopper	19-9-6	7	21
McMan:			
Jones	20-9-6	1	Off
Texas:			
Magruder	19-9-6	2	156
Tidal:			
Lassley	19-9-6	1	Off
Harjo	20-9-6	1	62
Slick:			
Wilson	8-9-6	1	43
Total		97	31,077
Seminole Pool			
Amerada:			
Fixico	23-9-6	2	53
Killings	23-9-6	4	224
Rentie	23-9-6	3	210
Atlantic:			
Cudjo	35-9-6	3	273
Barnsdall:			
Carter	24-9-6	6	127
Henry	14-9-6	2	235
Jones	34-9-6	4	277
Carter:			
Carter, B.	24-9-6	2	19
Carter, F.	23-9-6	3	68
Creamer	34-9-6	1	2
Cudjo, R.	35-9-6	4	80
Cudjo, W.	34-9-6	1	50
Gilliland	27-9-6	1	80
Grisso	23-9-6	4	98
Grisso, M.	13-9-6	1	125
Killing, G. F.	14-9-6	4	28
Killing, M. E.	23-9-6	12	3,297
Knapp	13-9-6	1	30
Lukes	27-9-6	5	613
Pounder	34-9-6	2	102
Simpson	35-9-6	2	80
Strothers	34-9-6	4	272
Vierson	34-9-6	1	18
Carter et al:			
Sanford, C.	16-9-6	1	141
Wisner, C.	16-9-6	1	64
Darby:			
Carter, J.	24-9-6	4	126
Fixico	26-9-6	7	1,148
Harjo, D.	25-9-6	1	31
Harjo, T.	23-9-6	3	43
Empire:			
Gross	23-9-6	1	40
Wilson	34-9-6	2	172
Gypsy:			
Butler	35-9-6	4	237
Carter	34-9-6	8	648
Cudjo, T.	34-9-6	4	568
Fixico	25-9-6	7	51
Harjo	26-9-6	3	283
Wolfe	36-9-6	4	475
Independent:			
Fixico, P.	23-9-6	3	186
Harjo	25-9-6	2	20
Butler	35-9-6	3	364
Independent-Garland:			
Fixico, T.	23-9-6	5	109
Independent-Inter-Ocean:			
Jones	26-9-6	4	22
I. T. I. O.:			
Allen	26-9-6	2	12
Bowlegs	26-9-6	12	1,421
Goodin	23-9-6	3	140
Harjo	23-9-6	3	43
James	23-9-6	2	26
Reed	23-9-6	1	8
Kingwood-Shell:			
Harjo	22-9-6	3	321
Magnolia:			
Boren	2-8-6	1	2
Franks	25-9-6	3	202
Mid-Continent:			
Rentie	14-9-6	9	271
Tayeche	24-9-6	5	118
Phillips:			
Strothers	27-9-6	2	55
Prairie:			
Cudjo, R.	35-9-6	3	316
Franks	35-9-6	6	542
Giblet	35-9-6	3	1,096
Gross	25-9-6	5	16
Mason	35-9-6	1	52
Spencer	13-9-6	1	4
Strothers	27-9-6	8	837
Tiger	10-8-6	1	28
Pure:			
Strothers	26-9-6	17	2,907
Strothers "B"	36-9-6	4	157
Strothers "C"	34-9-6	1	212
Shell:			
Harber	22-9-6	1	74
Lasley	23-9-6	2	13
Sinclair:			
Carter, J.	13-9-6	2	15
Cudjo "A"	35-9-6	6	806
Cudjo "B"	35-9-6	4	1,310
Dixey	22-9-6	2	330
Fixico	35-9-6	4	313
Superior:			
Cudjo, B.	35-9-6	4	75
Noble	15-9-6	1	2
Texas:			
Mayhue	14-9-6	2	405
Strothers	3-8-6	2	30
Turman:			
Cudjo	35-9-6	4	486
Grisso	35-9-6	1	173
Jones	34-9-6	4	560
Total		273	24,475
East Seminole Pool			
Barnsdall:			
Keypaya	7-9-7	1	12
Continental:			
Boring	17-9-7	1	40
Johnson	18-9-7	3	1,060
Continental-Sinclair:			
Perry	18-9-7	3	390
Devonian:			
Harjo	18-9-7	1	8
Gypsy:			
Harjo	18-9-7	2	184
Magnolia:			
Drewery	18-9-7	2	12
Prairie:			
Stubbs	18-9-7	3	412
Shaffer:			
Hangler	19-9-7	1	5
Sinclair:			
Coody, B.	18-9-7	3	1,154
Coody, D.	17-9-7	1	35
Johnson, G.	18-9-7	1	140
Johnson "B"	18-9-7	1	80
Thompson "B"	18-9-7	1	731
Sinclair-Continental:			
Warrior, J.	17-9-7	2	27
Sinclair-Gypsy:			
Okfuskee	18-9-7	1	150
Sinclair-Phillips:			
Warrior, S.	17-9-7	1	46
Total		29	4,486
Searight Pool			
Amerada:			
Johnson	4- 9-6	1	13
Nicey	3- 9-6	1	2
Strothers	3- 9-6	2	77
Barnsdall:			
Jackson	5- 9-6	2	3
Johnson	22-10-6	1	22
Burke-Greis et al:			
Nevins	32-10-6	1	754
Varnum	32-10-6	1	259
Carter:			
Davis	4- 9-6	2	9
Frazier	3- 9-6	5	177
Kiker	2- 9-6	1	4
Mandler	2- 9-6	2	2
Scott	26-10-6	1	12
Amerada (Comm.)	11- 9-6	1	2
I. T. I. O. (Comm.)	11- 9-6	1	199
Mayhue (Comm.)	11- 9-6	1	487
McMan (Comm.)	11- 9-6	1	421
Skiff (Comm.)	10- 9-6	1	26
Slick (Comm.)	11- 9-6	2	288
Stewart (Comm.)	10- 9-6	1	86
Strothers (Comm.)	11- 9-6	2	632
Gypsy:			
Cudjo	4- 9-6	3	456
Nevins	32-10-6	2	337
Saloche	31-10-6	1	71
Magnolia:			
Varnum	32-10-6	3	30
Varnum, W. F.	5- 9-6	1	465
Mid-Continent:			
Grayson	34-10-6	4	16
Saloche	33-10-6	5	256
Mid-Continent-Homaokla:			
Nevins	32-10-6	4	501
Papoose:			
Marks	32-10-6	1	210
Pine, W. B.:			
Lulu	4- 9-6	1	12
Prairie:			
Cannon	33-10-6	1	1
Carter, J.	10- 9-6	1	1
Hauck	33-10-6	1	3
Hurford	32-10-6	1	16
Kinkaid	33-10-6	2	39
Weimer	22-10-6	1	9
Pure:			
Aldridge	3- 9-6	3	572
Shell:			
Crump	32-10-6	1	Off
Strothers	3- 9-6	4	79
Sinclair:			
Polly	3- 9-6	4	1,186
Superior:			
Varnum	4- 9-6	1	17
Texas:			
Fleet	4- 9-6	1	17
Twin State:			
Varnum	4- 9-6	2	90
Wilcox:			
Chupco	4- 9-6	6	195
Total		85	8,059

PRODUCTION OF ST. LOUIS POOL

Average daily production for the St. Louis Pool for the week ending December 24:

Company, farm—	Location	Wells	Prod.
Amerada:			
Richardson	16-7-4	1	Off
Atlantic et al:			
Bass	9-7-4	1	127
Bowley	9-7-4	1	Off
Burke	16-7-4	3	448
Milburn	15-7-4	1	82
Standridge	10-7-4	1	77
Barnsdall:			
Stahl	30-7-5	3	235
Blackwell:			
Cherry	25-7-4	3	371
Lewis	24-7-4	2	110
Carter:			
McGee	26-7-4	1	15
Darby:			
Floyd	22-7-4	1	Off
Bettis	21-7-4	1	125
Harber	23-7-4	1	27
Nixon	9-7-4	2	130
Youngblood	16-7-4	4	459
Darby-Atlantic:			
Cardwell	15-7-4	1	262
Empire:			
Bettis	17-7-4	1	77
Jackson	36-8-4	1	210
State	36-7-4	1	107
Gypsy:			
Bruno	25-7-4	3	51
Collins	25-7-4	4	257
Dodson	26-7-4	4	93
Green	17-7-4	6	3,683
Johnson	29-7-5	1	48
LeClair	23-7-4	4	1,218
Rosemond	26-7-4	4	199
Stahl	30-7-5	5	72
Gypsy et al:			
Johnson, W.	7-7-4	1	104
Healdton:			
Hines	17-7-4	1	50
Home Gas Co.:			
St. Louis	14-7-4	1	210
Houston Oil:			
Wyatt	17-7-4	5	945
Independent:			
Barrow	1-7-4	3	360
Blandin	30-7-5	5	837
Youts	19-7-5	8	1,849
Independent-Darby:			
Brown	14-7-4	2	11
Carson	22-7-4	1	Off
Davis	15-7-4	1	27

Company, farm—	Location	Wells	Prod.
Freid	23-7-4	2	46
Jordon	10-7-4	1	22
LeClair	23-7-4	1	10
Pappan	16-7-4	3	312
Pillar	15-7-4	1	6
Standridge	14-7-4	3	21
Wallace	14-7-4	4	29
Independent et al:			
Hambry	14-7-4	2	15
Was	30-7-5	1	1
Independent-Mid-Kansas:			
Asher	3-7-4	1	99
Weldfelt	2-7-4	1	557
Independent-Range:			
Null	35-8-4	1	259
Independent-Skelly:			
James	16-7-4	2	131
Independent-Westland:			
Booze	9-7-4	1	30
Rhodd	16-7-4	3	285
I. T. I. O.:			
McGee	26-7-4	1	108
Brandenburg	35-8-4	1	846
Shobe	35-8-4	4	237
Weams	21-7-5	1	56
Weldfelt	2-7-4	3	1,243
I. T. I. O.-Sinclair:			
Woodard	18-7-5	1	43
Inter-Ocean:			
Coley	24-7-4	2	51
McGee	23-7-4	5	141
Irvin Marten:			
Kelly	2-7-4	3	483
Magnolia:			
Anderson	1-7-4	1	14
Banta	14-7-4	3	217
Billington, C.	11-7-4	1	1
Billington, E.	22-7-4	4	492
Brandenburg	18-7-5	5	1,041
Bullock	18-7-5	1	1
Caudle	13-7-4	2	68
Cherry "A"	25-7-4	5	332
Cherry "B"	26-7-4	3	9
Clour	11-7-4	2	14
Davis, C. E.	24-7-4	1	8
Davis, Frank	15-7-4	2	9
Engle	34-7-4	1	49
Fyke, George "A"	20-7-5	1	106
Fyke, George "B"	20-7-5	2	236
Fyke, L. L.	20-7-5	1	2
Fyke, Tulle "A"	20-7-5	1	61
Fyke, Tulle "B"	20-7-5	2	184
Fyke, Tulle "C"	20-7-5	1	44
Fyke, Tulle "D"	20-7-5	2	133
Fyke, Tulle "E"	28-7-5	1	10
Green, B. M.	13-7-4	1	6
Green, Lulla	13-7-4	1	61
Guinn	20-7-5	1	21
Harden	12-7-4	2	152
Hatcock, C. D.	11-7-4	1	8
Hatcock, Lee	11-7-4	1	66
Harper, J. J.	19-7-5	1	11
Harper, James	19-7-5	2	4
Hembree	19-7-5	4	37
Hilton, J.	22-7-4	1	859
Jones "A"	18-7-4	1	69
Jones, M. A.	8-7-4	1	5
Jordan	12-7-4	1	Off
Kiner	17-7-5	1	1
Latimer	17-7-4	2	116
Louis, J. L.	15-7-4	1	8
Lynn, D.	21-7-4	1	202
Lynn, F.	21-7-4	2	387
Mull	15-7-4	1	8
Nicklass	31-7-5	2	58
Nona	11-7-4	1	32
Richardson	15-7-4	2	249
Risenhoover	14-7-4	4	12
Robbins, J. M.	15-7-4	4	169
Robbins, Pearl	15-7-4	1	33
Rowe, L.	18-7-5	1	14
Rowe, M.	18-7-5	1	4
Shipshewano	19-7-5	4	66
Singletary, D.	15-7-4	1	7
Singletary, F.	23-7-4	3	16
Singletary, T.	14-7-4	3	25
Tartar	15-7-4	2	999
Vieux, F.	13-7-4	1	8
Vieux, N.	13-7-4	1	1
White, Roy	20-7-5	1	7
Wilborn, Mary	24-7-4	2	336
Wilborn, S. A.	24-7-4	6	681
Williamette	11-7-4	1	15
Youts, Charles	20-7-5	5	289
Youts, C. A.	19-7-5	4	351
Youts, H. E.	20-7-5	7	673
Magnolia-Pierce:			
Hubanks	17-7-4	2	757
McCulloch et al:			
Bruno	25-7-4	5	764
Smith	25-7-4	6	756
Mid-Continent:			
Decker	8-7-4	1	45
Robbins	9-7-4	2	17
Quinn	20-7-5	1	20
Mid-Kansas:			
Getzelman	25-7-4	4	564
Lunay	30-7-5	3	234
Minnehoma:			
Simms	16-7-4	3	196
Packard:			
Church	29-7-5	1	275
Panther:			
Town Lot	14-7-4	1	20
Town Lot	23-7-4	1	Off
Phillips:			
Cherry	25-7-4	2	90
Grace	2-7-4	1	42
Lydick	24-7-4	1	15
Stahl	30-7-5	4	241
Prairie:			
Desmond	25-7-4	4	71
Bodkins	26-8-4	1	12
Ellison	25-7-4	4	256
Gammon	30-7-5	8	2,479
Hembree, A. O.	19-7-5	4	1,152
Hembree	18-7-5	1	9
Linn	30-7-5	4	383
Smith	30-7-5	3	32
Wolf	29-7-5	4	861
Younts	19-7-5	4	145
Prairie et al:			
Davis	18-7-5	4	43
Nesbit	18-7-5	2	181
Pugh	7-7-5	1	16
Prairie-Shaffer-Independent:			
Cummings	17-7-4	2	108
Reagan	17-7-4	3	1,499
Rice	17-7-4	2	86
Pure:			
Brandenburg	21-7-4	1	337
Dodson	26-7-4	2	117
Latimer	21-7-4	1	24
Thomas	26-7-4	4	800
Thrilkill	19-7-5	1	48
Tolen	1-7-4	1	77
Shaffer O. & R.:			
Cherry	23-7-4	4	146
Tolen	30-7-5	4	271
Shell:			
Hines	22-7-4	1	142
Smith	21-7-5	1	52
Stahl	30-7-5	1	43
Younts	28-7-5	1	20
Sinclair:			
Blandin	24-7-4	13	910
Brandenburg	7-7-5	3	500
Bruno	28-7-4	2	246
Coley	24-7-4	2	332
Gilbreath	25-7-4	2	671
M-Quaska	11-7-4	1	70
Nadash	29-7-5	4	465
Neeley	25-7-4	4	361
Neeley "B"	25-7-4	2	376
Nesbit	18-7-5	8	975
O-Kitchee	19-7-5	7	508
Sinclair et al:			
Kelly "A"	2-7-4	2	265
Skelly:			
Decker	16-7-4	2	354
Slick-W. E. & R.:			
Latimer	16-7-4	3	371
Superior:			
Caudle	13-7-4	2	27
Jackson	36-8-4	1	34
Texas:			
Cherry	25-7-4	4	360
Goodwin	35-8-4	1	60
Zoeller	30-7-5	1	25
Tidal:			
Smith	26-7-4	1	Off
Warner-Quinlan:			
Light	18-7-4	1	55
Westheimer-Daube:			
Freid	24-7-4	5	416
Garrett	23-7-4	2	65
Westheimer-Daube-Gypsy:			
McGee	23-7-4	5	61
Woffara Drilling Co.:			
McGee	4-7-4	1	2,103
Wyatt:			
Fee	10-7-4	1	20
Smith	26-7-4	1	25
Total		452	49,935

ROCKY MOUNTAIN AREA

(Continued from Page 56)

made, but measurements as to quality of gas and the pressure will be made this week. The hole is bottomed in a sandy shale and is not yet in the sand. Two sands are expected not far below the bottom and the second one is the one in which it is hoped to find oil as it shows saturation at the outcrops. Before drilling deeper the flow of gas was estimated at 6,000,000 feet a day and a sample revealed 1.8 gallons of gasoline to the 1,000 feet. In this same county, the Texas Production Co.'s No. 1 Potter, NE SW, Section 30-2n-96, White River, is bottomed at 5,587 feet with the 5¾-inch cemented at 5,535 feet. There was a show of oil in sand at 5,844-64 feet and this will be given a test before drilling deeper.

In Huerfano County, the Parker Club, Inc., No. 1 Fee, Section 4-28-68, Badito-Alamo structure, joint with the Kinney-Coastal Oil Co., reached the top of the Muddy at 3,923 feet, but will not be drilled in until the 5⅜-inch is underreamed and set to shut off some water coming from above.

Tests Near Denver

The interest in the two wells drilling near Denver continues unabated, though the week failed to reveal any new developments. The McDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, Arapahoe County, which the officials had promised to bring in on Christmas day, is bottomed at 5,090 feet and shut down. On the day before Christmas the 6¼-inch dropped while being worked on and it is not yet known how much damage resulted. Officials of this company claim that only 2,800 feet of Pierre shale were cut as against more than double that thickness found farther to the west. Geologists who have been at the well do not fully concur in this conclusion, their opinions being partly based on samples taken from the sump. The other well which is causing a discussion of the thickness of the shale in the Denver basin is the Ruby Hill Oil & Gas Co.'s No. 1 Braden, SE cor., Section 44-4s-69, Jefferson County. This well has been shut down for several weeks at 3,568 feet and is expected to resume January 1. Officials claim that only 1,200 feet of Pierre was cut and that the hole now is 200 feet in the Benton. Again, there is a difference in the interpretation of the samples. Several companies have made analyses of samples from these two wells, but the results have not been given out. If the interpretations given by officials are correct, the two wells will yield information of vast importance and doubtless cause a reconsideration of the oil possibilities in the Denver basin.

In Larimer County, Stanley Barrows' No. 1 Barrows, NW SE, Section 7-11n-68, Round Butte structure, will resume in a few days. It is bottomed at 2,195 feet at the bottom of the Morrison and has had good shows of oil in that formation. It will be drilled to the Sundance, the next horizon.

In Fremont County, M. L. Eno's No. 1 Griffith, SE cor. NW, Section 5-20-69, Florence district, was dry and abandoned at 3,125 feet.

Jackson County

All the wells in Jackson County are shut down for the winter. These include the Midwest Refining Co.'s test on Buffalo Creek and the Producers & Refiners' well at Pole Mountain. The Continental Oil Co.'s wells at Walden are all shut down and the two started the past summer will not be drilled any deeper for the next two years. This was in agreement with a decision of the Department of the Interior when the permits were renewed.

The Continental Oil Co.'s No. 1 Pipe Springs, NE SE, Section 27-27-49, Bent County, is drilling at 5,197 feet.

In Moffat County, the Mountain Fuel Supply Co.'s No. 1 Lasher, NE NE, Section 25-12-100, Bartram Dome, the only one of that company's several operations in that district which is not shut down for the winter, is straightening crooked hole at 360 feet. The Texas Production Co.'s No. 1 Berlin, SW NE, Section 19-12-100, which cut a third gas sand at 2,180 feet, is bottomed at 2,187 feet and thawing out water lines. Thomas McLaughlin and others' No. 1 Williams, NW SW, Section 2-3n-92, Iles district, is bottomed at 4,385 feet in sandy shale and fishing for tools. It is not yet in the objective Sundance. The Midwest Refining Co.'s No. 24 Hannewalt, SE SE, Section 4-6n-92, a test of the Bell Rock structure, commenced spudding on December 20.

IDAHO

The Grand Teton Oil Co.'s No. 1 Blevins, SW, Section 32-5n-44, Horseshoe structure, Teton County, Idaho, is reported drilling at 1,667 feet after casing off with the 10-inch a substantial show of gas at 1,656 feet. Just above the gas it cut three thin water sands. The gas encountered at 1,656 feet is reported to be the largest of the several shows found. The hole is just entering a shale formation. The same company's No. 1 Bevan, SE, Section 28-5n-44, is drilling in the Frontier at 1,367 feet and flowing water by heads. There is considerable pressure reported back of the water. The California Co.'s No. 1 Sorensen, NW SW, Section 33-3n-41, Meadow Creek Dome in Bonneville County, is drilling at 3,639 feet. A report from Los Angeles states that the Bankers Investment & Trust Co. has been formed to take over the holdings of Christian Vrang and others in Wyoming, New Mexico and California. J. Phillip Gallagher is the organizer and head of the new company. He also is interested in the Horseshoe structure where the Grand Teton Co. is drilling and the deal may include some of the holdings in that development.

WYOMING

Routine operations marked developments in Wyoming, there being no important completions reported. The All-States Oil Co.'s No. 3, SE cor., Section 36-37-82, North Casper Creek structure in Natrona County, cemented the 5⅛-inch casing at 3,072 feet and is drilling at 3,232 feet near the top of the Tensleep. The Embar was cut at 3,205-27 feet and oil rose 600 feet in the hole. This is a heavy black oil of 22 gravity. The temperature at the bottom of the hole was 136°. This well is near a well drilled several years ago by the Midwest interests. In Salt Creek, the Midwest Refining Co.'s No. 31 Rosenberg, Section 35-40-79, the deep test to the granite, is still bottomed in the Sundance at 2,872 feet and cleaning out after cementing off the oil.

In Johnson County, to the north of Salt Creek, C. L. Sackett and others' No. 2, SE SE, Section 4-43-82, Kaycee district, was abandoned at 1,347 feet. It was not carried to the Madison lime as at first planned, but No. 1, in the C SE, Section 4-43-82, which was drilled to 350 feet several years ago, will be deepened to the Madison, a permit to make the test having been granted by the Department of the Interior. The United Oil Co.'s No. 2, SE cor., Section 7-47-82, Crazy Woman Creek, (Matthew Foreman interests) is drilling at 600 feet. The first Wall Creek is expected at around 800 feet.

In Converse County, John Ackard's No. 2 McKinley Switch, SW NE, Section 28-31-69, is shut down for the winter at 3,412 feet. At this depth it was through what some claim to be a granite wash.

Park County

In Park County, the Texas Production Co.'s No. 1 Sonners, NW cor., Section 29-51-100, Oregon basin, is bottomed at 3,527 feet, on top of the Embar, and is waiting for cement to harden. The 8⅝-inch was cemented at this depth. C. E. Orchard's No. 1 Owens, SE cor., Section 29-52-100, cemented the casing at 3,560 feet on top of the Embar and is waiting. His No. 7 Rue, SW NW, Section 28-51-100, is standing at 3,570 feet, and No. 1 Atherly, SW cor., Section 33-52-100, is drilling at 2,240 feet. Outside of Oregon basin in Park County, the Midwest Refining Co.'s No. 31 Rosenberg, SW NE, Section 25-58-98 Frannie Dome, is drilling at 140 feet in black shale, and the Resolute Oil Co.'s No. 1, SW NE, Section 17-57-101, Badger basin, is drilling at 4,300 feet, but probably will suspend shortly for the winter. The Cody Petroleum Co.'s No. 1 Polecat, SW cor., Section 22-57-98, is at 2,700 feet with some collapsed casing in the hole. It had 500,000 feet of gas in sand at 2,448-2,588 feet. T. N. Clark and others' No. 2, SE SE, Section 11-49-102, Spring Creek, is shut down for the winter at 3,937 feet with 2,000 feet of oil in the hole. The oil is from the Tensleep. The hole is to be carried to the Madison lime.

In Hot Springs County, the Gebo Consolidated Oil Co.'s No. 1, SW cor., Section 23-44-95, Gebo Dome, is bottomed at 1,335 feet and underreaming the 10-inch. The Producers & Refiners Corp.'s No. 3, NW NW, Section 24-56-98, Garland Dome, is fishing for tools in the top of another gas sand at 4,234 feet.

Carbon County

In Carbon County, the Midwest Refining Co.'s No. 31, SE, Section 1-18-78, Dutton Creek, is drilling at 3,045 feet in hard gray shale, and the Kanawha Oil & Gas Co.'s No. 1 Allen Lake, NE, Section 34-23-79, is bottomed at around 2,000 feet and preparing to mud casing to shut off a leak. It will be drilled deeper in the spring. The Producers & Refiners' No. 2 Mahoney Dome, NW, Section 34-26-88, is bottomed at 4,378 feet and has bailed mud to 4,250 feet. It was standardized at this depth and the hole is reported showing a little oil in one of the horizons below the red beds. The same company's No. 2 O'Brien Springs, Section 11-24-88, is bottomed at 209 feet and preparing to ream the casing.

In Fremont County, the Kinney-Coastal Co.'s No. 1 Dykeman, SE SW, Section 22-3n-1w, Pilot Butte, is bottomed at 3,370 feet and underreaming the 8¼-inch at 3,156 feet. The Texas Production Co.'s No. 1 State, SW SW, Section 36-34-95, Alkali Butte, is drilling at 1,210 feet.

In Lincoln County, the Mountain Oil Corp.'s No. 1 State, Lot 1, Section 36-25½-115, cemented the 20-inch on bottom at 78 feet and suspended operations for the winter. The Midwest Refining Co.'s No. 1 Little Grays River, Section 25-37-117, shut down for the winter at 1,731 feet.

In Uinta County, the California Co.'s No. 1 Union Pacific, Section 7-17-116,

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WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 62)

Camel Oil Co.'s No. 2-B Harrah, 330 f.. from N and E, Sec. 150, Blk. 3, I.&G.N.R.R. Sur. ... Rig.

Champlin Ref. and Danciger's No. 3 Cook-Faulkner, 330 ft. S and E, NW cor. W 120 ac. of E 200 ac., Sec. 30, Blk. B-2, H.&G.N.R.R. Sur. ... Flowed 402 bbls. 2700-2705 ft.; 3,000,000 ft. gas; drlg. 2,720 ft.

Clayton-Key Oil Co.'s No. 1 Key, 330 ft. from S and W of E 42 ac. of N 84 ac. of S 168 ac., Sec. 1, B.&B. Sur. ... 7,000,000 ft. gas 2,425-2595 ft.; drlg. 2,595 ft.

Constantine et als' No. 1 Crews, 330 ft. S and W, NE cor. SW, Sec. 20, Blk. 30, H.&G.N.R.R. Sur. ... S.G. 2,190 ft.; S.D. 2,325 ft.

Danciger et als' No. 11 Jackson, 330 ft. S, 1,320 ft. W, NE cor. NW, Sec. 88, Blk. B-2, H.&G.N. Sur. ... T.D. 2,906 ft.

Danciger O. & R. Co.'s No. 5 Morse, 330 ft. N and E, SW SW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ... S.D. 2,505 ft.

Danciger O. & R. Co.'s No. 1 Shaw, 330 ft. from S, 286 ft. from E of E 39½ ac., NW, Sec. 5, Blk. 1, A.C.H.&B. Sur. ... T.D. 2,588 ft.

Danciger O. & R. Co.'s No. 2 Smith, 330 ft. from S and E. SE. Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 758 ft.

Danciger O. & R. Co.'s No. 1 Williams, 330 ft. from N, 330 ft. from E, S½ NW ... Estimated 15,000,000 ft. gas 2,610-70 ft; S.D. 2,720 ft.

Dunlop's No. 4 Morse, 330 ft. N and E SW cor. SW, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ... T.D. 2,431 ft.

Follet Pet. Corp.'s No. 1 Hood, 330 ft. from S and W of W 80 ac., SW, Sec. 32, Blk. 3, H.&G.N.R.R. Sur. Cellar.

Sines & Reiger's (formerly Eslick et als') No. 1 Mrs. J. A. Hopkins, NW cor. W 80 ac. of SW, Sec. 84, Blk. B-2, H.&T.C. Sur. ... S.D. 3,206 ft.

Gardner Bros. and Collins' No. 2 Saunders, 955 ft. from S, 330 ft. from E of W 68 ac. E½, J. G. Eustice Sur. Location.

Gulf Prod. Co.'s No. 1 Barrett, 967 f.. N and E, SW cor. NE, Sec. 131, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 2,418 ft.

Gulf Prod. Co.'s No. 3 Worley-A, 330 ft. N, 1,650 ft. W, SE SW, Sec. 36, Blk. 3, I.&G.N.R.R. Sur. ... Temp. abd. at 3,163 ft.

Gulf Prod. Co.'s No. 3 Saunders, 330 ft. S, 990 ft. E, NW cor. its 130-ac. lease out of SW cor., Sec. 40, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 2,880 ft.

Guernsey Oil Co.'s No. 1 Vaniman, 330 ft. N and W, E½ NE, Sec. 175, Blk. 3, I.&G.N.R.R. Sur. ... Drlg. 2,360 ft.

Haymer O. & G. Co.'s No. 1 Morse, 330 ft. each way out of SE cor. E½ SE, Sec. 45, Blk. A-9, H.&G. N. Sur. ... Fishing 1,780 ft.

Herragan Oil Co.'s No. 1 Bradford, 330 ft. from N, 990 ft. from E, Sec. 123, Blk. B-2 ... First S.G. 2,475-80 ft; 15,000,000 ft. gas 2,515-40 ft.; S.D. 3,140 ft.; S.O. 2,932-50 ft.

Lyon et als' No. 1-A Morse, 330 ft. from S and W, NW NW, Sec. 1, Blk. 26, H.&G.N.R.R. Sur. ... Rig.

Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. from N and W cor. SE, Sec. 200, Blk. B-2, H.T.N. Sur. ... Rig.

Magnolia Pet. Co.'s No. 4 Harrah, 330 ft. each way SW cor. NW Sur. 150, Blk. 3, I.&G.N.R.R. Sur. ... Location.

Magnolia Pet. Co.'s No. 1 Wright, 330 ft. S and W lines, S½ SW, Sec. 13, Blk. 3, I.&G.N. Sur. ... 15,000,000 ft. gas 2,707-10 f..; T.D. 2,838 ft. swabbed 243 bbls. 16 hours at 2,825-32 ft.

McIlroy Oil Co.'s No. 1 Arnold, 330 ft. each way NW cor. NW Sur. 139, Blk. 3, I.&G.N.R.R. Sur. ... Location.

Operators Royalty Co.'s No. 1 Eddington, 330 ft. each way NE cor. NW Sur. 34, Blk. B-2, H.&G.N.R.R. Sur. Location.

Oil Operators' No. 1 Bowers, 330 ft. from N, 330 ft. E. Sec. 93, Blk. B-2, H.&G.N. Sur. ... Show oil and gas 2,400-17 ft; S.D. 3,090 ft; S.O. 3,036-55 ft; first gas 2,483 ft; increased at 2,500 ft., 2,544 ft. and 2,950 ft.

Operators Oil Co.'s No. 1 Lovett, 330 ft. from N and W lines, W½ NE. Sec. 57, Blk. B-2, H.&G.N. Sur. ... Gas 2,390 ft; S.O. 2,837-47 ft; T. D. 3,061 ft; P.B. 2,880 ft.; shot 280 qts. from 2,830-80 ft; C.O. and swbng. 70 bbls. daily.

Operators Oil Co.'s No. 5 Cook-Faulkner, 990 ft. N, 330 ft. W, SE W 90 ac., Sec. 30, Blk. B-2, H.&G.N. Sur. ... S.D. 2,748 ft.

Operators Oil Co.'s No. 6 Cook-Faulkner, 330 ft. S and E, NW cor., Sec. 30, Blk. B-2, H.&G.N.R.R. Sur. ... S.G. 2,424 ft. and 2,477 ft.; drlg. 2,902 ft.; 25,000,000 ft. gas; T.P. 2,748 ft.

Operators Oil Co.'s No. 7 Cook-Faulkner, 330 ft. S, 820 ft. E. NW cor., Sec. 30, Blk. B-2, H.&G.N. Sur. ... S. G. 2,380 ft.; 30,000,000 ft. gas 2,691-2,830 ft.; T. D. 2,830 ft.

Phillips Pet. Co.'s No. 6 Jackson, 330 ft. from N, 990 ft. from E. line, S½ NE, Sec. 88, Blk. B-2, H.&G. N.R.R. Sur. ... T.D. 3,030 ft; fishing pipe.

Queen Oil Co.'s No. 1 Lovett, 330 ft. N and W, W½ NE, Sec. 35, Blk. B-2, H.&G.N.R.R. Sur. ... Drlg. 1,845 ft.

Quillian et als' No. 1 Barrett, 330 ft. from N. 330 ft. from E, Sec. 131, Blk. 3, H.&G.N. Sur. ... 20,000,000 ft. gas 2,660-2,705 ft; S.O. 3,100 ft; S.D. 3,350 ft.

Ray et als' No. 1 Noble, 240 ft. from S and 330 ft. from W line, W 80 ac., SW Sec. 10, Blk. A-6, H. &G.N. Sur. ... S. G. 2,708 ft.; drlg. 2,912 ft.

Rieger & Steckoll's No. 1 Bohr, 330 ft. from S and E, Sec. 37, Blk. B-3, H.&G.N. Sur. ... Drlg. 2,505 ft.

Robertson & Devore's No. 1 Saunders, 330 ft. from S and W, E½ NW, Sec. 40, Blk. 3, H.&G.N.R.R. Sur. ... Fishing 1,480 ft.

Shamrock O. & G. Co.'s No. 3 Saunders, 330 ft. N and E, SW E½ SE. Sec. 4, Blk. 1, A.C.H.&B. Sur. ... Drlg. 2,585 ft. 12,000,000 ft. gas; 2,458-2,585 ft. spraying oil 2,-550-85 ft.

Shamrock O. & G. Co.'s No. 1 Taylor, 330 ft. each way out of NE cor. NW, Sec. 1, Blk 2, H.&G.N. Sur. ... S. D. 2,775 ft.; S. G. 2,245-85 ft.

St. Clair Oil Co.'s No. 1 Dial, 330 ft. S and W, NE cor. SE, Sec. 10, Blk. 25, H.&G.N.R.R. Sur. ... Spudded and S.D.

Smith & McDaniel's No. 1 Noble, 330 ft. S line and 283 ft. W line, NE Sur. 49, Blk. A-9, H.&G.N.R.R. Sur. ... Location.

St. Clair Oil Co.'s No. 1 L. S. Stockton, SE cor., Sec. 35, W. R. Lee Sur. ... Spudded and S.D.

Stogner Meaders' No 1 Taylor, 330 ft. from S and E. SW, Sec. 7, Blk. H. A. H. Wallace Sur. ... 1,000,000 ft. gas 2,490-2,535 ft; 2,000,000 ft. gas; T.P. 2,490 ft S.O. 2,920 ft. and 2,992 ft; T.D. 3,112 ft.; cleaning out.

Stover and Shell's No. 1 Saunders, 990 ft. from N, 330 ft. from E, of N 100 ac., of W 149 ac., Sec. 3, B.&B. Sur. ... Drlg. 1,085 ft.

The Texas Co.'s No. 1 Bell, 2,310 ft. from N, 2,640 ft. from W, Sec. 183, Blk. B-2, H.&G.N.R.R. Sur. ... Spudding.

The Texas Co.'s No. 8 Cook-Faulkner, 1,158 ft. N, 1,835 f.. W, SE cor., Sec. 29, Blk. B-2, H.&G.N.R.R. Sur. Drlg. 2,425 ft.

The Texas Co.'s No. 15 Saunders, 330 ft. N and W, SE cor. W½ SE, Sec. 4, Blk. 1, A.C.H.&B. Sur. ... S.D. 2,610 ft.

Travis & Rieger's No. 1 Mackie, 330 ft. from N and E, Sec. 114, Blk. B-2, H.&G.N.R.R. Sur. ... 16,000,000 ft. gas; T.P. 2,685 ft.; rig burned 3,343 ft.

Travis et als' No. 1-B Webb, 330 ft. N and W, Sec. 61, Blk. 25, H.&G.N.R.R. Sur. ... Drlg. 1,010 ft.

Tripplehorn Oil Co.'s No. 1 Morse, 330 ft. from S and W, SW SE, Sec. 17, Blk. A-9, H.&G.N.R.R. Sur. ... S.D. 1,510 ft.

Vulcan O. & G. Co.'s No. 1 Carpenter, 330 ft. from N and W of W 80 ac., NW, Sec. 25, Blk. 25, H.&G.N. R.R. Sur. ... Driving casing 150 ft.

White Eagle O. & R. Co.'s No. 3 Faulkner, 1,158 ft. N, 330 ft. E. SW cor. E 80 ac., Sec. 29, Blk. B-2, H. &G.N.R.R. Sur. ... T.D. 2,727 ft.

Wright Wilson, trustee's No. 1 Chapman, 175 ft. from S and E lines, N½ NW, Sec. 69, Blk. 25, H.&G.N. Sur. S.O. 2,685 ft; S.D. 2,693 ft.

Wilcox-Pampa Oil Co.'s No. 10 Combs-Worley, 330 ft. S and W, NE cor. SW SW, Sec. 35, Blk. 3, I.&G. N.R.R. Sur. ... T.D. 2,813 ft; 32,000,000 ft. gas and 90 bbls. oil first 7 hrs; T.P. 2,811-13 ft.

HARTLEY COUNTY

Dana O. & G. Co.'s No. 1 Fritz, C NE, Sec. 81, Blk. 44, H.&T.C.R.R. Sur. ... Drlg. 981 ft.

HOCKLEY COUNTY

World Oil Co.'s No. 1 Ellwood, 320 ft. from N and W lines, League 7, Wilbarger County School lands; elevation 3,363 ft; contract depth 5,000 ft. ... S.D. 3,975 f..

HUTCHINSON COUNTY

Alamosa Oil Co.'s No. 4 Sanford, 310 ft. S, 320 ft. W, NE cor. N 160 ac., S 240 ac., Sec. 85, Blk. 46, H.& T.C. Sur. ... S.O. and wtr. 3,010-11 ft; S.D. 3,-095 ft.

Danciger O. & R. Co.'s No. 3 Moore, 330 ft. S and E, NW W½ SE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ... S.D. 2,870 ft.

Danciger Oil & Gas Co.'s No. 4 Moore, 330 ft. N and E of SW cor. W half SE Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ... Location.

Huey et als' No. 2 Smith et al, 330 ft. from N, 660 ft. from W, S 40 ac. of E 100 ac., SE. Sec. 12, Blk. Y.. Fishing 2,702 ft.

Midwest Explin. Co.'s No. 3 Moore, 330 ft. N, 330 ft. W, SE NE, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ... Set 8-in. casing 2,390 ft.

Oates & Jones, No. 1 Jasper, 450 ft. S, 330 ft. W, NE 121-ac. tract, Sec. 23, Blk. M-23, T.C.R.R. Sur. ... Drlg. 2,810 ft.

O. B. Penney's No. 2 Johnson Bros., 330 ft. from S line, 330 ft. from W line, W½ NE. Sec. 35, Blk. Y. A.&B. Sur. ... 31,000,000 ft. gas 1,990 ft; S.D. 3,-060 ft; S.O. 3,040-45 ft; I.P. 60 bbls.

Phillips Pet. Co.'s No. 1 Johnson-Mayer, 990 ft. from N line and 990 ft. from W line of NE Sec. 37, Blk. Y, A.&B. Sur. ... Location.

Phillips Pet. Co.'s No. 1 Johnson-Hood, 400 ft. from N line and 369 ft. from E line of N half of S half Sec. 68, Blk. 46, H.&T.C.R.R. Sur. ... Location.

Reliance O. & G. Co.'s No. 2 Sanford, 330 ft. S and E, NW W½ of N 80 ac. of S 320 ac., Sec. 83, Blk. 46, H.&T.C. Sur. ... S.D. 2,720 ft.

Smith & McDaniel's No. 1 Pitcher, 330 ft. from S and E, Sec. 19, Blk. M-21, T.C.R.R. Sur. ... S.D. 2,532 ft.

Spurlock et als' No. 1 Christian, 330 ft. from E, 440 ft. from N, SE SE, Sec. 33, Blk. Y, A.&B. Sur. ... Drlg. 405 ft.

Skelly Oil Co.'s No. 1 Byrd, 2,640 ft. from E line, 3,960 ft. from S line of W 3,094 acres, D. Luce Sur. ... Location.

The Texas Co.'s No. 4 J. L. Moore, 330 ft. S and W, NE cor. SW, Sec. 125, Blk. 4, I.&G.N.R.R. Sur. ... Set 8-in. casing 2,393 ft.

Travelers Oil Co.'s No. 2 Cockrell, 350 ft. from E and S lines, Sec. 8, Blk. B-3, D.&S.E. Sur. ... 1,000,000 ft. gas 2,610-2,770 ft; T. D. 3,039 ft; T.P. 3,010-39 ft; shot 120 qts. 3,010-39 ft; averaging 120 bbls. per day.

LAMB COUNTY

Graham O. & G. Co. et als' No. 1 Ellwood, CWL, Sec. 9, Blk. T, T. A. Thompson Sur. ... Fishing 4,000 ft.

LIPSCOMB COUNTY

Brown et als' No. 1 Box T Ranch, SW NE, Sec. 612, H.&T.C. Sur. ... Shut down 3,750 ft.

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. ... Shut down 4,860 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch ... Small S.O. 1,133-40 ft.; S.D. 4,-167 ft.

MOORE COUNTY

Amarillo Oil Co.'s No. 1 Perkins-A, 330 ft. each way out of NW cor. NE. Sec. 76, Blk. 3 ... T.D. 3,575 ft.; plugged back 3,087 ft.; cleaning out.

Canadian River Gas Co.'s No. 1-C Sneed, 660 ft. from N and E, SW, Sec. 46, Blk. 6-T, T.&N.O.R.R. Sur. ... U.R. 10-in. casing, 1,175 ft.

Dana O. & G. Co.'s No. 1 Anthony, C NW, Sec. 260, Blk. 44, H.&T.C.R.R. Sur. ... S.D. 3,312 ft.

Fritch O. & G. Co.'s No. 1 Lee Bivins, C N 40 ac. of N 160 ac., Sec. 4, Geo. Mahan Sur. ... 2,000,000 f.. gas 1,550-65 ft.; S.D. 2,680 ft.

Operators Royalty Co. et al's No. 1 Jones, 330 ft. from S line, 330 ft. from E line of SW SW Sec. 164, Blk. 3-T, T.&N.O.R.R. Sur. ... Location.

Red River Gas Co.'s No. 1 J. M. Shelton, 330 ft. each way from SE cor., Sec. 52, Blk. 3, G.&M. Sur. ... S.D. 2,235 ft.

MOTLEY COUNTY

Explin. Co.'s No. 6 Matador, 330 ft. from N line, 330 ft. from E line, Sec. 132, Blk. M ... S.D. 4,011 ft.

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. ... S.D. 580 ft.

POTTER COUNTY

Canadian River Gas Co.'s No. 1 Allison "A," 336 ft. from E line, 5,439 ft. from S line, Sec. 1, W. T. Palmer Sur. 11,000,000 ft. gas 2,295-2,375 ft; S.D. 2,805 ft.; 40,000,000 ft. gas.

RANDALL COUNTY

W. A. Patterson's No. 1 Palo Duro, Sec. 60, Blk. K-14 ... S.D. 1,250 ft.

ROBERTS COUNTY

Big Bend Oil Co.'s No. 1 Ledrick, Sec. 7, Blk. A-5 ... T.D. 5,992 ft; shot 10 qts. 5,270-93 ft; S.O. 5,288 ft; C.O.

WHEELER COUNTY

Burnett & Hosher's No. 1 Hosher, 330 ft. N and W. SW SE, Sec. 63, Blk. 17, H.&G.N.R.R. Sur. ... S.D. 1,110 ft.

Dunaway Bros.' No. 1 Worley, 330 ft. S and W, NE cor. NW, Sec. 39, Blk. 24, H.&G.N.R.R. Sur. ... Rig.

Edwards et al's No. 1 Cates, C NW NE Sec. 73, Blk. 23, H.&G.N. Sur ... Location.

Holmes et als' No. 2 Close, 990 ft. N and 400 ft. W, SE SE SE, Sec. 82, Blk. 23, H.&G.N.R.R. Sur. ... Drlg. 1,375 ft.

Lela O. & G. Co.'s No. 1 Williams & Laycock, 330 ft. from S. 209 ft. from W, W½ NW, Sec. 20, Blk. A-8, H.&G.N. Sur. ... Drlg. 1,805 ft.

Lone Star Gas Co.'s No. 1 Ridinger, C NW NW Sur. 65, Blk. 17, H.&G.N. Sur. ... Location.

Lone Star Gas Co.'s No. 1 Simms, C SW NE, Sec. 103, Blk. 23, H.&G.N.R.R. Sur. ... Drlg. 1,225 ft.

Martin & Debous' No. 3 Close, C NW NE Sec. 83, Blk. 23, H.&G.N.R.R. Sur. ... Location.

Murchison & Fain's No. 1 Cooper, C SW NW, Sec. 80, Blk. 23, H.&G.N.R.R. Sur. ... Drlg. 1,808 ft.; 20,000,000 ft. gas 1,787-1,808 ft.

Prince & Adam's No. 1 Buchanan, C NW NE, Sec. 89, Blk. 17, H.&G.N. Sur. ... U.R. 8¼-in. casing 1,530 ft.

Upham Gas Co.'s No. 5 Close-Gooch, 30 ft. N, 660 ft. E. SW cor. SW NW, Sec. 81, Blk. 23, H.&G.N.R. R. Sur. ... Location.

Upham Gas Co.'s No. 1 Tinley, C NE NE Sur. 66, Blk. 17, H.&G.N.R.R. Sur. ... Location.

Vaughn et als' No. 3 Ackley, 330 ft. from N, 330 ft. from W, Sec. 4, Blk. 27, H.&G.N. Sur. ... T.D. 1,340 ft; 5,000,000 ft. gas 1,-660-1,770 ft; junked hole; skidding rig 60 ft. south; drlg. 1,755 ft.

Wischkamper et als' No. 2 Curry, C NW SE, Sec. 53, Blk. 23, H.&G.N. Sur. ... S.D. 430 ft.

Wischkamper et als' No. 2 Johnson, 200 ft. S and W, NE cor. SE, Sec. 50, Blk. 17, H.&G.N.R.R. Sur. ... Drlg. 1,340 ft.

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Waukesha Type WK-4 cycle, 6¾x8 inches, 120 HP engine with twin disc clutch, 18 inches by 12 inches belt pulley. Strictly modern and first class condition. Complete with Radiator all mounted on steel frame. Will furnish with equipment for gasoline or natural gas fuel. Price $1,250.
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Waukesha Distributors—Oil Engines, Rails, Cranes, Shovels, Pipe, Steel Piling, Tanks.

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FOR SALE—Two No. 10 Sweetland Filters, with monel leaves. Stein-Brill Corporation, 25 Church Street, New York, N. Y.

FOR SALE—1 75 H. P. Buffalo drilling engine with deep hole string of tools located in the town of Lost Springs, Kansas. D. M. Tyler, Dewey, Oklahoma.

EQUIPMENT WANTED

WANTED TO PURCHASE good second hand deep hole rotary complete. Must be in first-class condition. Give location, size, make and complete description, with lowest cash price. Write Box E-37, The Oil and Gas Journal, Tulsa, Okla.

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CAPITAL—Investment broker will aid in financing good oil deal. Submit full details. Write Box E-30, The Oil and Gas Journal. Tulsa, Okla.

WE ARE STARTING 2,150-foot test, Shackelford County, structure located by recognized geologists. Acreage around well owned by Humble-Shell-Continental and National Refining Co. Have several close-in 40 and 80-acre leases will sell at low price. Map and full details on request. Box 152, Brownwood, Tex.

BUSINESS OPPORTUNITIES

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SALES ORGANIZATION or DISTRIBUTOR wanted to handle complete unit of Air or Gas Lift Ejector, Wall Packer and Booster Valves for the Oil Fields. The important feature of the Ejector is that the pressure is placed directly on the fluid load without one pound of pressure on the Oil Sand. Equipment fully patented. H. KROSCOV MFG. CO., 271-75 First Ave., Milwaukee, Wis.

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For acreage in Rancho La Ballona between Ohio Oil Co. 3,000-bbl. well flowing barefooted in Venice, and Associated Oil Co.-Vickers' deep test, No. 1 in Baldwin Hills, Inglewood Field, shut in for over two years. Harry Greber, 753 Overland Ave., Culver City, Calif.

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1,206 ACRES FIFTEEN MILES Southwest from New Field, Pettus, Bee County, Texas. We own this in fee. Major companies holding leases around us. Want best deal can get with Drilling Company. Lacks and Knight, San Antonio, Texas.

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FOR SALE: COMPLETE GASOLINE PLANT. 1 unit Compression System, 300 gallons production. Additional gas available. Tulsa County. No Brokers. Write Box E-57, The Oil and Gas Journal, Tulsa, Okla.

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Oil Men read the Classified Wants section each week. If your proposition is listed there it is bound to receive some attention.

The OIL and GAS JOURNAL
Tulsa, Oklahoma.

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This is a most opportune time to sell your used equipment. Let a classified advertisement in The Oil and Gas Journal find buyers for you.

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POSITION as leaseman for major companies. Experienced in Arkansas leasing. Now employed in other work. Wants permanent connection. J. D. Shearer, Stuttgart, Ark.

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OIL LEASES, royalties, producing royalties, and drilling blocks. O. O. Milliken, Box 63, Oklahoma City, Oklahoma.

ROYALTIES—PRODUCTION

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Happy New Year

The Classified Wants Department takes this opportunity to extend to all users and readers of the Classified Wants Section a sincere wish for A Happy and Prosperous 1930

The OIL and GAS JOURNAL
PRODUCING REFINING ENGINEERING MARKETING

Chicago Demand for Gas Oil and Fuels

Supplies Not Large and Price Situation Tending Towards Greater Strength. Gasoline Market Showing No Change

By J. B. Waldo

CHICAGO, Dec. 30.—The active demand in the Chicago market today was for gas oil and light fuel oils for furnace fuel and for the 18-20 industrial fuel oil. All of course must have a zero cold test. The supplies of these products are not large and some of the stations of large distributors were asking for the prompt delivery of additional supplies. Offerings by refiners continue light and the price situation on all these materials tended towards greater strength. Many of the tank car dealers in fuel oils were holding their zero gas oil at 3⅜ cents as their lowest price and quite commonly 3½ cents being asked. As many expressed the situation the question with these products was to get the material. The light fuels were in the same position. There is a steady movement on all furnace oils today but as yet distillates are easy in tone. The heavy industrial fuel oils, chiefly the 18-20, is in excellent demand although the spot market is not really active and orders have to be gone after. The market for a good zero oil of this gravity was being held at 80 cents or better on Monday. The weather has been very mild over the week end and today and this is giving the trade an opportunity to accumulate some material which all believe will be wanted shortly.

The gasoline market showed no change. U. S. Motor gasoline was decidedly easy in tone with prices freely quoted for immediate shipment of 6 to 6⅛ cents. The higher gravities were better held although there was no really active demand. Kerosene continues neglected.

Country Business Light

Reports from all parts of the territory show that the chief consumption of gasoline at present is in the towns and cities and the country business is most light. Off the main roads traveling is almost impossible except to very light cars and even these find long stretches which they cannot navigate. If it is true as has been stated that one-third of the autos are owned on the farms, it is evident that any circumstance which knocks out the roads leading to the farms seriously reduces the consumption of gasoline. Not only is the spot demand reduced but the contract customers during such periods restrict their shipments.

Narrowing Markets

There has been a lot of planning going on for the resumption of activities right after the beginning of the year. But even with good weather it is going to require some serious thought for the conditions in this district suggest that something new must be done by some of the sales organizations if they wish to keep abreast of the parade. It is a well known fact that a number, if not most of the large refiners both in Group 3, and in this territory, depend on their spot sales for the real success of their business. They sell a certain proportion of their output through their own stations, a certain proportion through their contract customers and still have left a very considerable proportion of their output which they have planned to sell to spot buyers. Recently a manager wrote to his sales manager that it seemed strange that with so many good jobbers in the territory their spot sales should be so small. The writer of the letter was not fully informed as to the situation. He undoubtedly has a list of concerns in the territory whom he would like to sell. The chances are that not one of the large concerns in that list is free to make a contract, being owned by some of the larger refineries. Others have contracts which are just as favorable as the seller can offer as to material or terms. So why should not these jobbers ask the refiner who wants to sell them for something better in the shape of prices or discounts or a concession of some sort. Some refiners living up to a strict interpretation of the Code of Trade Practices, have instructed their sales forces not to solicit business from jobbers under contract with another refiner. To many this seems too strict an interpretation of the ruling and many insist no such meaning is intended and that in no business is it considered unethical for a manufacturer to solicit the customers of another manufacturer. If they did not solicit this business there would be no competition they claim and there must be competition. But getting back to the list of prospective customers, after all the openly or privately owned stations and the stations that are under some form of exclusive contracts are marked off the list, there are only a few names left and these usually of the smaller class with small purchasing power.

What argument has that sales manager left to make to the jobbers whom he is expected to sell? He may say that his refinery is larger but they are all large enough; he may claim his material is better but what the buyer has been using has satisfied his customers and it pretty nearly narrows itself down to a matter of prices and terms. Although there will be a general denial of any statement that the major refiners or any other refiner for that matter have made any changes in their contract or any individual concessions yet each has some cases which he can instance of how some other refiner has added an extra cent to the guarantee or is allowing a certain discount for volume of sales or giving advertising allowances and some have even stated that gifts of pumps and other quipment has not been entirely discontinued. Securing any absolute proof of these statements is quite another matter. The gentlemen who make these charges believe them themselvs and in some cases state they have seen and read over the contracts but this is only hearsay testimony after all. Yet the old saying that where there is so much smoke there must be some fire is quite illustrative in this case. As one sales manager said, "What am I going to do? The only spot buyers left are the bootleggers."

The situation in this territory is not being improved by the advent into the district of the new Empire refinery at East Chicago. When operating at capacity it will turn out a considerable number of cars of gasoline daily. It has been claimed it will not require to seek new customers as it has purchased or has under exclusive contracts enough jobbers' trade to care for this output. To take a specific example the Mutual Oil Co. of Adrian, Mich., was a distributor of Shell products until the company was bought by the Cities Service Co., likewise the Penn-Marr Oil Co. of Ft. Wayne, Ind., was a distributor of Barnsdall products until it was added to the Cities Service string. Both of these concerns were distributors of large quantities of gasoline. These cases show the result of the opening of a new refinery in this refining center. It is currently reported that another large refining and distributing organization will shortly seek a site for a refinery in the Chicago district on the old theory of profitable manufacturing that it is easier to bring the materials to the plant than the customers.

Week of Little Demand

As might have been expected, there was very little demand for gasoline last week, either spot or on contract. Of course the movement on contract was only slowed down by this lack of demand while spot business seemed to have vanished. Little attempt was made by sellers to bring in orders as they realized that most of the spot buyers and some contract buyers had filled their storage with the cheaper gasoline which had been offered and that these jobbers had sold very little of it partly because of delay in deliveries as some of the gasoline was to be shipped about this time and partly because the jobbers' own sales had been so small. So far the trade in this territory has shown no inclination to order for storage. Some few inquiries have been made but they are not known to have resulted in any business and in some cases the jobbers have declined to purchase at the price. In their opinion any advance after the first of the year will be slow and it will not pay them to anticipate their wants and stand the costs of carrying the gasoline for several months until they need it. Last spring there were quite a number of the larger jobbers who filled storage and then continued to buy just so long as they could make a good profit on the sale of the purchased material holding their stored material to be sold at the height of the season and the plan proved so good it may be followed by these same jobbers again.

The demand for the U. S. Motor grade was so light that prices were almost nominal. Some sales were made at 6¾ cents but this was not the bottom as sales were made short at 6 cents and covered at a profit as marketers were quoted at less than 6 cents for resale by at least one or two refiners. The little business that was done was at such a range it is hard to say what is or was the market. Some refiners continued to name a nominal price of 7¼ cents while others reduced their price openly a quarter cent to 7 cents and would meet competition as low as 6¾ cents from responsible refiners. There was not enough business to go around and the price situation on U. S. Motor was decidedly easy in tone. For the higher tests there was a light demand but the offerings were not burdensome and prices held fairly well, the 64-66 375 being a fraction higher. Antiknock gasoline was well liked and sold freely, some refiners claiming their sales were equal to their business in U. S. Motor gasoline. There was no noticeable export demand here. Natural gasoline moved slowly.

The kerosene market was unchanged as to demand and the business continued to be light. Kerosene is now just about competing with distillate as to price but not in demand.

Furnace Oil Movement

The milder weather of the last few days of last week, slowed up the demand for furnace oils to some extent but there is an active call for material. In some sections the roads are so bad deliveries cannot be made by trucks and in these there may be some accumulations but generally the movement from refiner to ultimate consumer is proceeding with regularity. The great rush that was brought by the first days of zero weather is gone but there is a more healthy and reasonable movement. Distillates are moving freely but owing to the quantity of material available the prices do not advance but just about hold their own. There may be as some claim a little more strength in the market, but so far the prices are held down by purchases made at former low prices for material which can still be delivered at these prices. As a matter of fact some quotations have dropped back an eighth of a cent as they failed to hold at the higher prices named during the active demand.

Gas Oil Market

The situation in the gas oil market is peculiar in that the straightrun gas oil is freely offered and is weak while the zero material is scarce and higher in price. The weakness in the straightrun or gas makers' oil is explained by the statement that some of the larger refiners have ceased to buy for cracking which considerably reduces the demand. The demand for the oil from gas makers is not active in the spot market as they are largely relying on their contracts or are drawing on storage. The market ranges around 2¾ cents. The zero gas oil is hard to buy here from any source. Many refiners claim their orders for January already equal their probable output and if they have any oil to sell at all it will be late in the month. The straw zero gas oil is almost unobtainable except where some one bought early in the season and still has some of the oil left. The price might be as low as 3½ cents but more likely it would be much higher. A dark zero gas oil fuel 32-36 gravity is priced to users or distributors at 3⅜ to 3½ cents and if the gravity were a little low or the flash a little too high the price might be 3¼ cents and if the odor is bad it might be down to 3⅛ cents as a distress lot of oil.

Fuel Oils

In the lighter fuel oils such as are desirable for oil burners in larger buildings the market is very strongly held and same are asking as high as $1.30 for the full 28-30, zero oil. The demand for this grade was specially keen during the cold snap and it is still in active request. In the heavy industrial fuel oils the local market is being "pinched" by a lack of offers for immediate or prompt delivery, a curtailment of present supplies and the demand which, while not the largest ever known, is still active and healthy. Early last week some Oklahoma refiners quoted marketers for resale 80 cents for immediate shipment and late in the week the prices had been advanced to 85 cents for immediate and 90 cents for the first half of January. This was on an 18-22 fuel oil, zero, not high in sulphur content. Another refiner, also in Oklahoma, had some oil available at 82½ cents for immediate but the quantity at that price was limited. There was practically none of the local or nearby plants that had any fuel oil to sell for an indefinite time; some are more explicit and say they will have nothing to offer over January. At these costs the tendency is to ask consumers as high as 90 to 95 cents but owing to remaining supplies of less expensive oil the full advance is not insisted on and those who try to obtain prices based on present costs find they are not doing much business. This condition is, of course, partly local but so long as the Shell and the Sinclair refineries stay out of the market, a supply of fuel oil must be had from some source to keep the industrial plants moving in this section, the many locomotives fired and the homes of thousands of dwellers heated and this oil will have to be had even at high costs. Should a cold wave come right after the beginning of the year as many believe will happen the January situation will show added strength. There are some who still maintain there are large reserves of fuel oil somewhere but with prices at the present level these reserves should be uncovered shortly because we are now in the midst of the fuel oil season and it only lasts another brief 60 days. Holding too long may cause the loss of a

(Continued on Page 127)

General Weakness Noted In the East

Downward Revision of the Posted Quotation for Gasoline Now Looked For. Price Changes Lacking in Rest of the Market

By A. E. Mockler
New York Bureau, The Oil and Gas Journal

NEW YORK, Dec. 30. — General weakness in gasoline developed throughout the East during the week, and, while the quotation for U. S. Motor is nominally unchanged, much of the current business is being done at concessions of from an eighth to a quarter cent, and a downward revision of the posted quotation is looked for.

Price changes were lacking in the remainder of the market, with kerosene and furnace oils in strong position, under active buying, and paraffin waxes and cylinder stocks still somewhat inclined to weakness.

Holiday quiet, combined with unfavorable weather which has cut gasoline consumption materially, combined to make for a rather listless market for refined products.

Tank Car Gasoline

Continued weakness is reported locally, but thus far the posted price has been maintained at 8¾ cents for U. S. Motor at refineries. An increasing volume of business is going through at 8½ to 8⅝ cents, however, and a general reduction to the 8½-cent level in the near future could not come as a surprise.

California U. S. Motor is reported offering at 8¼ cents delivered north of Hatteras, which figures back about 6 cents at the refinery in California. Only one cargo is being quoted out at that figure.

A sale involving 30,000 bbls. of U. S. Motor gasoline is reported this week at 8½ cents delivered at New York. This cargo was supposedly sold for shipment out of the Gulf, but inquiry discloses that it was in reality shipped from a North Atlantic point.

The present unsettled position of the tank car market here is the most disturbed since general acceptance of the Code of Ethics about midyear, and has been precipitated by the seasonal decline in consumption, the drop in demand having been rather severe during the past fortnight owing to the generally unfavorable weather conditions. The increased consumption afforded by several new entries into the field has also been a factor, although this is felt most severely through the price-cutting tactics of small jobbers not directly affiliated with any of the large marketing groups.

Current slackness in demand is resulting in the accumulation of fairly sizeable reserves of U. S. Motor gasoline at the refineries, and this development makes the market position at the start of the new year anything but favorable. California shippers, however, are expected to regulate their shipments to avoid the accumulation of excessive stocks of motor fuel at Eastern terminals, which might later develop into distress stocks.

Premium fuels continue to hold up well in the face of the rather widespread cutting on ordinary quality motor gasoline.

Tank Wagon Markets

The market is far from stabilized, and principal marketers are keeping close watch on local conditions at several points which threaten the stability of the general market. In several instances, notably in northern New York, leading marketers have been compelled to revise their quotations downward during the past several weeks to protect their outlets from cut-price competition afforded by independent jobbers. A number of these small operators, it is reported, have not yet subscribed to the industry's Code of Ethics, which leaves other marketers no alternative but that of "meeting competition" to hold their gallonage.

With the refinery market steadily weakening, it is generally felt in marketing circles a downward revision in tank wagon and service station schedules may be forced early in 1930.

Kerosene

There has been an active inquiry for water white in tank car markets, and refiners are firm at 7¾ cents at refineries. Cold weather has stimulated consumption, and jobbers have been inquiring for prompt shipment stocks in fairly substantial quantities. Stocks of kerosene here are not large, and continued active export inquiry has been a factor in moving current production readily into distributing and consuming channels.

Tank wagon kerosene movement has shown a further increase and current sales are near peak for the year. Marketers are holding water white firm at 15 cents in the New York territory, and the outlook favors a continuation of this quotation through the early part of the new year, at least. So far as retail prices are concerned, kerosene has been the most stable of all refined products during the past two years. Kerosene distillate sales are heavy, the market holding in firm position.

Furnace Oils

There have been no further price changes in domestic heating oils, but recently advanced quotations on the higher grades have been firmly maintained.

Contract withdrawals of furnace oils are heavy, and, in addition, a substantial volume of spot business has developed. The heavy snowfall experienced in the East has intensified marketers' delivery problems, and a number of the principal factors have been compelled to amplify their night delivery service to keep oil moving out to customers on schedule.

Fuel Oil

Contract movement has furnished the bulk of the activity in the bunker "C" market, refiners quoting the market unchanged at $1.05 per barrel, bulk, f.o.b. New York and New Jersey refinery terminals. Refiners have their 1930 business lined up on both the marine and industrial ends, and contracting for the new year is just about at an end.

Interest is centering in what the new year will bring in price movements on fuel oil, and it might be said sentiment is fairly optimistic. Factors in the local area believe the market can do no worse than hold at the current level, while some interests are still distinctly bullish, and believe $1.15 or $1.25 will be done before the end of 1930. Venezuelan expansion, it is pointed out, has reached its limit with current transportation facilities, and with no new pipe line or lake tanker construction scheduled, South America will be a known factor from the competitive standpoint. Mexico is still dwindling in importance as a competitor in the bunker oil market, and with domestic crude production apparently well in hand, the outlook for fuel oil would appear favorable.

Growing consumption of heavy oil as a furnace fuel in the East cannot be lost sight of in looking ahead in the fuel oil market, the trend in domestic heater construction being consistently toward the production of a burner using a low grade, and consequently low-priced, oil fuel.

Diesel Oil

Business for the new year is pretty well lined up, and refiners are holding the market firm at $2 per barrel in bulk at terminals. While the amount of future marine business is the largest ever written by East Coast refiners, it is pretty obvious many of the large consumers are still committed to a policy of leaving part of their requirements for coverage in the spot market during the course of the year.

Refinery holdings of Diesel oil at East Coast points are not excessive, and statistically the market is in very sound position. Refiners have been able to balance production with consumption rather closely this year, and with a minimum of competition on the part of outside shipments to the Atlantic Seaboard, local factors have been able to exercise better control over the Diesel oil market than with any of the other important refined products.

Gas Oil

Consumption is running into substantial totals as the year draws to a close, with the market position unchanged. The principal refiner is still nominally quoting 5¼ cents in bulk at terminals, but the bulk of the current business continues to move at 4¾ to 5 cents.

A large amount of business has been booked for the first quarter of 1930 and refiners expect the market will continue to hold around current levels. Demand for the lower grades of gas oil for delivery on furnace oil contracts has held up well, with jobbers ordering forward tank car shipments in fairly large volume.

Paraffin Wax

No further price changes have developed, but the market tone is still a little unsettled. A little selling pressure has developed in one or two quarters, and some small amount of business has gone through at concessions. This selling represents the year-end readjustment of stocks by a few sellers, and is by no means general.

Notwithstanding the unfavorable statistical position of the market as represented by the heavier refinery holdings and the smaller export shipments during 1929, most refiners appear to hold fairly firm price views for the first quarter of 1930. Normally, under present market conditions, many operators would be taking a short position, but, owing to the sounder position of the oil market in general, and perhaps a slight repercussion from the recent debacle in the stock market, there appears to be comparatively little speculative interest in paraffin wax at this time.

Domestic consuming manufacturers, who have been on a hand-to-mouth basis throughout December in anticipation of their year-end inventories, are expected to come back into the market for fully refined in a large way early in January, and refiners are pinning their hopes on a maintenance of the present market or a possible price mark-up on this development.

Petrolatum

The market closes the year in fairly stable position. Business has shown a sharp falling off, owing to year-end inventories at the plants of consuming manufacturers, but refiners look for an early improvement in this situation.

Both the white and the amber grades have been booked in a fairly substantial way on 1930 contracts, it is understood, pharmaceutical manufacturers having placed contracts in large volume. Export activity is expected to quicken early in the new year.

Lubs

Pricewise, there have been no important developments in the lub oil market. Bright stocks remain in easy position, but refiners are holding fairly firm at recently reduced levels, and the market is believed near bottom. Steamed refined 600 and other cylinder stocks are showing some softness, but sellers are not inclined to go much under quoted levels on spot business. Export inquiry has shown a little improvement, and it is understood that fairly large quantities of Pennsylvania oil have been booked for shipment abroad during January. Export buyers have been on a hand-to-mouth basis for some weeks past, and it is thought they are now being forced into the spot market for replacements. Cylinder oils have been booked in a large way for delivery on 1930 contracts, at prices to be fixed from month to month during the year, in conformity with the spot markets.

Tank car movement of red and pale oils has slackened further, and refiners do not look for much improvement in demand from the domestic trade until about the middle of January. Manufacturing operations in many lines are discontinued for periods varying from three days to two weeks in order to facilitate inventories and equipment repair work, and this is naturally reflected in a drop in consumption of industrial lubs. Export movement of red and pale oils, however, has held up well, with a good business being transacted both at the Gulf Coast and at the principal East Coast refinery terminals.

Export Markets

The past week has been a quiet one at the Gulf, with no new cargo business in either gasoline or kerosene reported, and no cargo inquiries. European buyers are expected to come back into the market in a large way around the middle of the month.

The Panuco crude market appears to be weakening, sellers having been unsuccessful in their efforts to force buyers to pay 85 cents. An inquiry for 200,000 bbls. of Panuco crude for delivery over 1930 is in the market, with the buyers bidding 70 to 71 cents per barrel, as to delivery date, and operators here expect to see the contract closed at 73 to 75 cents.

Export gasoline is rather scarce at North Atlantic at present, but current unfavorable weather conditions, curtailing domestic consumption, are expected to result in an accumulation of stocks available for export shipment over the next fortnight. There has been a fairly heavy export movement of gasoline and naphtha out of New York, Philadelphia and Baltimore during the closing half of December.

Fuel oil export inquiries have slackened at the Gulf, and the market is showing a little easiness. Gas oil, however, continues to show a fairly firm undertone.

Export inquiry for lub oils has picked up, both at the Gulf and at North Atlantic, and a little business was reported closed. Cylinder oils are showing some unsettlement in price, but the market for pale and red oils appears fairly steady.

Paraffin wax has moved in fair quantities out of the Gulf, but the local market situation remains rather dull. Refiners and buyers are still apart on their price views, although it is expected the market will reach a trading level shortly.

East Coast refiners are expecting increasing competition in export sales from Venezuela during 1930, particularly with respect to a number of South American markets where Aruba and Curacao enjoy a freight differential over the North Atlantic.

Petroleum Exports

The following table shows principal exports of refined petroleum products

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Natural Gasoline Manufacture

Effect of Steam On Fractionation At Gasoline Plants

By F. L. Kallam
Southwestern Engineering Corp.

The modern vertical still now in common use in the natural gasoline industry is very similar in design to the bubble type absorber. In the more recent installations the still and reflux sections have been combined into a single column. These columns are operated with great economy and with a simplication of the plant corresponding to that which ensues in the absorption system with the installation of the bubble type absorber.

The most important contribution of this form of column is its greater efficiency in contacting the rising vapors with the downflowing reflux, and this feature has resulted in greater capacities per unit area of cross-section. With this combined still and fractionating column, the enriched oil, after subjection to steam heating in an insulated tubular preheater, is introduced into the middle of the column, the oil flowing downward through an upward flowing medium of steam and is removed in a stripped condition at the bottom. The vapors, composed of gasoline, oil and steam, pass upward through the stilling section into the fractionating portion of the column, where they are washed by the returning reflux.

The reducing steam in leaving the fractionator is only partially saturated with gasoline fractions. As a matter of fact, a considerable portion of this steam may be condensed in the fractionating section due to the temperature gradient through the column. Water so condensed in this fashion will migrate through the column with the reflux, being re-evaporated as it finally reaches the warmer portion of the fractionator.

In certain instances, where fractionation is poor and the temperature of the overhead vapors must be held relatively low in order to prevent absorption oil going into the finished gasoline, this condensed water has actually been known to enter the still section along with the reflux. Under such conditions the re-evaporation of this water has caused operating difficulties of considerable magnitude.

Even where the condensed steam does not interfere with operation, it does affect the fractionating efficiency because it requires heat from the rising vapors for evaporation which should rightly go towards re-evaporating the lighter gasoline fractions on each tray. When such condensate is reboiled to again form steam, the resulting partial pressure effect is such that the boiling point of the gasoline fractions are reduced, allowing the heavier oil fractions to leave the fractionating section at a top temperature which under conditions of a water-free reflux would produce an oil-free product.

Use of Dehydrators

While it is readily understandable that water condensing in the upper portions of the column will destroy the fractionating efficiency, the methods for its prevention are few and difficult to apply. The first scheme to occur to one is to use dehydrators on the columns, placing them at various points so that the reflux containing water will be freed of its water content, allowing the pure reflux to continue on its way downward through the tower.

While such arrangements sound simple at first thought, nevertheless dehydrators of this nature have not always been a mechanical success, and in fact, have been a source of some annoyance whenever used. Other than this fact is

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Who's Who
IN NATURAL GASOLINE MANUFACTURE

CARTER OIL CO.*

The Carter Oil Co., a producing subsidiary of the Standard Oil Co. of New Jersey whose operations are largely confined to the State of Oklahoma is one of the major manufacturers of natural gasoline of that State, with one plant in Wyoming.

As the company's crude oil production operations expanded, plants were installed to take care of the casinghead gas available from producing wells. Formerly the plants were of the small compression or oil absorption type but in recent years the company has built some of the largest plants in the Mid-Continent Field.

The company's expansion in the manufacture of natural gasoline has been especially rapid since the discovery of the Seminole area in Oklahoma. In the past three years the company has built five plants in what is termed the Greater Seminole area with a total capacity of approximately 200,000 gallons daily. Three of the plants each have a capacity of 50,000 gallons daily. As has been done by several other companies, the natural gasoline plant operations of the Carter company in the Seminole area in part have been combined with the gas lift used in production of crude oil. Due in part to this method of operation and the heavy gasoline content of the gas secured from the older wells the Seminole plants are showing an exceptionally high settled production.

The Carter company does not operate refineries but the bulk of the natural gasoline production is absorbed by the parent company and its subsidiary organizations. The company maintains a natural gasoline department with headquarters at its general offices in Tulsa. George E. Edgett, who has been engaged in the natural gasoline business for several years, is general superintendent of plants. J. B. Freeman is sales manager.

Following is a list of the company's plants:

Location in field—	Daily capacity (gals.)
OKLAHOMA	
S half NW Sec. 34-10-6, Seminole County	50,000
SE SE Sec. 15-9-6, Seminole County	60,000
W half NE Sec. 23-8-6, Seminole County	10,000
E half SW NE Sec. 14-7-6, Seminole County	50,000
SW NW Sec. 3-10-8, Seminole County	25,000
E half NW Sec. 9-26-6, Osage County	23,000
SW NW Sec. 23-4-2, Carter County	10,000
WYOMING	
Salt Creek	15,000
Total	253,000

*Fifth of a series of articles describing briefly the operations of the major natural gasoline manufacturers.

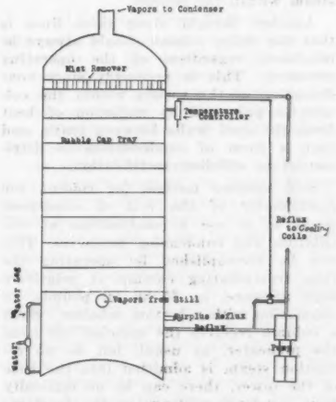
A PRACTICAL SUGGESTION

A DEPHLEGMATOR

The gasoline industry is gradually realizing the many advantages of using a lighter absorption medium and the 500° F. initial boiling point oil is slowly being replaced by oils with over points even as low as 375° F. To use these lighter absorption oils, more attention must be given to dephlegmator design as the problem of separating gasoline and undesirable oils becomes more complicated.

In the tubular knockout towers, the separation of the heavy ends is accomplished by fractional condensation. That is, as the temperature is reduced to certain predetermined point the heavy end simply condenses. With the bubble tray dephlegmator, the separation is effected by fractionation and actual vapor pressure equilibria are set up on each tray giving a fairly sharp separation.

The dephlegmator shown here is of the bubble tray type and is preferable to the perforated or sieve style, because of its wide range in working capacity. The shell contains the bubble cap trays and a baffled mist remover near the top. The heavy ends as well as condensed steam drop to bottom where a water leg automatically removes the water. The surplus heavy ends not used in the circulating reflux is run by gravity into the still, the reflux is run to the suction of the pump, which forces it through a few coils of pipe in the cooling tower and thence into the top of the dephlegmator. A direct acting temperature controller is placed in the tower above the top plate and this control is connected to a regulator in a by-pass on the pump. The by-pass prevents the pump from getting "gassed up" and makes control of the operation easily regulated.



A dephlegmator.

This type of dephlegmator permits higher temperatures to be carried and a much sharper cut to be made. It also eliminates the troublesome problem of scale prevention or removal where water is used as a cooling agent.

Practical suggestions by those connected with the construction and operation of natural gasoline plants are invited. Payment will be made as soon as suggestions are accepted. Address all communications to the Natural Gasoline Department, The Oil and Gas Journal, Tulsa.

Could Obtain Many By-Products From Natural Gasolines

By H. J. Hunter
Columbian Gasoline Corp.

The natural gasoline industry today consists of a daily production of over 6,000,000 gallons of natural gasoline. Only a short time ago natural gasoline was considered a by-product, the recovery of which was considered only when the gas contained large quantities of gasoline. If dry gas or high pressure natural gas was treated for gasoline the gasoline plant was considered as secondary to the carbon black plant, pipe line or other distributions of the natural gas itself.

Within the past few years more knowledge has been obtained of the constituents of the gas and gasoline as well as constant improvements in gasoline plant design construction and operation. As the result of developing a condition of efficient plants there has come potential production of lighter constituents that are undesirable in natural gasoline in excess of the production of the gasoline itself.

A conservative estimate of the excess butanes in gasoline plants would be in the neighborhood of 1,500,000 gallons daily assuming that the natural gasoline itself contained 30 to 40 per cent butanes. The butanes that are allowed to remain in gasoline are left in it for the reason that no other profitable market is at present available and the gasoline manufacturer cannot afford to sacrifice the gallonage in his production for the difference in price that butane free gasoline commands.

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(Continued on Page 126)

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Natural Gasoline Manufacture

Effect of Steam On Fractionation At Gasoline Plants

By F. L. Kallam
Southwestern Engineering Corp.

The modern vertical still now in common use in the natural gasoline industry is very similar in design to the bubble type absorber. In the more recent installations the still and reflux sections have been combined into a single column. These columns are operated with great economy and with a simplication of the plant corresponding to that which ensues in the absorption system with the installation of the bubble type absorber.

The most important contribution of this form of column is its greater efficiency in contacting the rising vapors with the downflowing reflux, and this feature has resulted in greater capacities per unit area of cross-section. With this combined still and fractionating column, the enriched oil, after subjection to steam heating in an insulated tubular preheater, is introduced into the middle of the column, the oil flowing downward through an upward flowing medium of steam and is removed in a stripped condition at the bottom. The vapors, composed of gasoline, oil and steam, pass upward through the stilling section into the fractionating portion of the column, where they are washed by the returning reflux.

The reducing steam in leaving the fractionator is only partially saturated with gasoline fractions. As a matter of fact, a considerable portion of this steam may be condensed in the fractionating section due to the temperature gradient through the column. Water so condensed in this fashion will migrate through the column with the reflux, being re-evaporated as it finally reaches the warmer portion of the fractionator.

In certain instances, where fractionation is poor and the temperature of the overhead vapors must be held relatively low in order to prevent absorption oil going into the finished gasoline, this condensed water has actually been known to enter the still section along with the reflux. Under such conditions the re-evaporation of this water has caused operating difficulties of considerable magnitude.

Even where the condensed steam does not interfere with operation, it does affect the fractionating efficiency because it requires heat from the rising vapors for evaporation which should rightly go towards re-evaporating the lighter gasoline fractions on each tray. When such condensate is reboiled to again form steam, the resulting partial pressure effect is such that the boiling point of the gasoline fractions are reduced, allowing the heavier oil fractions to leave the fractionating section at a top temperature which under conditions of a water-free reflux would produce an oil-free product.

Use of Dehydrators

While it is readily understandable that water condensing in the upper portions of the column will destroy the fractionating efficiency, the methods for its prevention are few and difficult to apply. The first scheme to occur to one is to use dehydrators on the columns, placing them at various points so that the reflux containing water will be freed of its water content, allowing the pure reflux to continue on its way downward through the tower.

While such arrangements sound simple at first thought, nevertheless dehydrators of this nature have not always been a mechanical success, and in fact, have been a source of some annoyance whenever used. Other than this fact is

(Continued on Page 126)

Who's Who
IN NATURAL GASOLINE MANUFACTURE

CARTER OIL CO.*

The Carter Oil Co., a producing subsidiary of the Standard Oil Co. of New Jersey whose operations are largely confined to the State of Oklahoma is one of the major manufacturers of natural gasoline of that State, with one plant in Wyoming.

As the company's crude oil production operations expanded, plants were installed to take care of the casinghead gas available from producing wells. Formerly the plants were of the small compression or oil absorption type but in recent years the company has built some of the largest plants in the Mid-Continent Field.

The company's expansion in the manufacture of natural gasoline has been especially rapid since the discovery of the Seminole area in Oklahoma. In the past three years the company has built five plants in what is termed the Greater Seminole area with a total capacity of approximately 200,000 gallons daily. Three of the plants each have a capacity of 50,000 gallons daily. As has been done by several other companies, the natural gasoline plant operations of the Carter company in the Seminole area in part have been combined with the gas lift used in production of crude oil. Due in part to this method of operation and the heavy gasoline content of the gas secured from the older wells the Seminole plants are showing an exceptionally high settled production.

The Carter company does not operate refineries but the bulk of the natural gasoline production is absorbed by the parent company and its subsidiary organizations. The company maintains a natural gasoline department with headquarters at its general offices in Tulsa. George E. Edgett, who has been engaged in the natural gasoline business for several years, is general superintendent of plants. J. B. Freeman is sales manager.

Following is a list of the company's plants:

Location in field—	Daily capacity (gals.)
OKLAHOMA	
S half NW Sec. 34-10-6, Seminole County	50,000
SE SE Sec. 15-9-6, Seminole County	60,000
W half NE Sec. 23-8-6, Seminole County	10,000
E half SW NE Sec. 14-7-6, Seminole County	50,000
SW NW Sec. 3-10-8, Seminole County	25,000
E half NW Sec. 9-26-6, Osage County	23,000
SW NW Sec. 23-4-2, Carter County	10,000
WYOMING	
Salt Creek	15,000
Total	253,000

*Fifth of a series of articles describing briefly the operations of the major natural gasoline manufacturers.

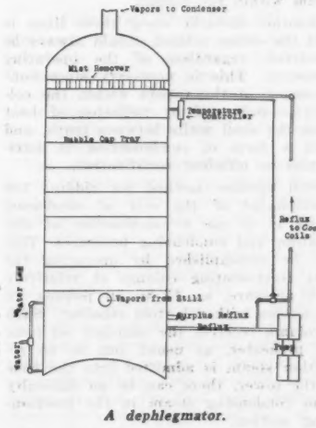
A PRACTICAL SUGGESTION

A DEPHLEGMATOR

The gasoline industry is gradually realizing the many advantages of using a lighter absorption medium and the 500° F. initial boiling point oil is slowly being replaced by oils with over points even as low as 375° F. To use these lighter absorption oils, more attention must be given to dephlegmator design as the problem of separating gasoline and undesirable oils becomes more complicated.

In the tubular knockout towers, the separation of the heavy ends is accomplished by fractional condensation. That is, as the temperature is reduced to certain predetermined point the heavy end simply condenses. With the bubble tray dephlegmator, the separation is effected by fractionation and actual vapor pressure equilibria are set up on each tray giving a fairly sharp separation.

The dephlegmator shown here is of the bubble tray type and is preferable to the perforated or sieve style, because of its wide range in working capacity. The shell contains the bubble cap trays and a baffled mist remover near the top. The heavy ends as well as condensed steam drop to bottom where a water leg automatically removes the water. The surplus heavy ends not used in the circulating reflux is run by gravity into the still, the reflux is run to the suction of the pump, which forces it through a few coils of pipe in the cooling tower and thence into the top of the dephlegmator. A direct acting temperature controller is placed in the tower above the top plate and this control is connected to a regulator in a by-pass on the pump. The by-pass prevents the pump from getting



A dephlegmator.

"gassed up" and makes control of the operation easily regulated.

This type of dephlegmator permits higher temperatures to be carried and a much sharper cut to be made. It also eliminates the troublesome problem of scale prevention or removal where water is used as a cooling agent.

Practical suggestions by those connected with the construction and operation of natural gasoline plants are invited. Payment will be made as soon as suggestions are accepted. Address all communications to the Natural Gasoline Department, The Oil and Gas Journal, Tulsa.

Could Obtain Many By-Products From Natural Gasolines

By H. J. Hunter
Columbian Gasoline Corp.

The natural gasoline industry today consists of a daily production of over 6,000,000 gallons of natural gasoline. Only a short time ago natural gasoline was considered a by-product, the recovery of which was considered only when the gas contained large quantities of gasoline. If dry gas or high pressure natural gas was treated for gasoline the gasoline plant was considered as secondary to the carbon black plant, pipe line or other distributions of the natural gas itself.

Within the past few years more knowledge has been obtained of the constituents of the gas and gasoline as well as constant improvements in gasoline plant design construction and operation. As the result of developing a condition of efficient plants there has come potential production of lighter constituents that are undesirable in natural gasoline in excess of the production of the gasoline itself.

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figure of 1,390,363 bbls. is approximately twenty-seven days' supply at the current rate of consumption. The following table summarizes the report for November.

California Natural Gasoline Production, Distribution and Stocks
November, 1929
Production by Fields

	Gas treated (1,000 cu. ft.)	Natural gasoline produced (gallons)
Fullerton and Whittier	655,893	1,325,010
Midway	3,221,154	4,560,424
Huntington Beach	1,331,534	3,610,014
Long Beach	9,030,225	15,827,261
Richfield	1,084,626	1,312,644
Santa Fe Springs	13,855,610	18,305,739
Seal Beach	2,135,552	3,324,605
Ventura Avenue	6,884,551	6,319,178
All other fields	10,707,099	11,650,785
Total	48,906,244	66,235,660

Production by Methods

Type of plant—	Natural gasoline produced (gallons)	Gasoline recovery per MCF gas treated
Oil absorption	44,491,148	1.364
Compressor	258,880	1.095
Combination comp. and oil absorption	21,477,876	1.339
Drip	7,756	....
Total	66,235,660	1,354

Finished gaso. produced at plants 23,887 bbls.

Distribution

Stocks first of month		1,350,075 bbls.
Produced during month		1,577,040 bbls.
Quantity mixed with crude or unfinished oils	202,814 bbls.	
Used in blending at refineries	1,234,212 bbls.	
Stocks end of month	1,390,363 bbls.	
Evaporation losses	16,644 bbls.	
Balance	83,082 bbls.	
	2,927,115 bbls.	2,927,115 bbls.

Stocks

Natural gasoline held by natural gasoline plant operators	1,845,959 gals.
Natural gasoline held by refineries	56,549,304 gals.
Total	58,395,263 gals.

MANY BY-PRODUCTS CAN COME FROM GASOLINES

(Continued from Page 125)

propane and a small amount of butane as a fuel.

Synthetic Chemicals

One of the foremost authorities in the country recently predicted a future industry of great magnitude. This coming industry is that of producing synthetic chemicals based upon petroleum.

The number of petroleum hydrocarbons is very large and their mixtures are very complex. In fact it is almost impossible to separate constituents in petroleum when their boiling points are much in excess of 100° F. Therefore, this future industry would depend largely upon the natural gas and gasoline industry for its raw material. This would leave available all constituents boiling below that of pentane which would be as follows:

Constituents—	Boiling point (° F.)
Methane	—259
Ethane	—127
Propane	—44
Isobutane	+10
N-Butane	+31
Isopentane	+82
N-Pentane	+97

Commercial Application

Processes already worked out if not on a commercial scale have proven that. Natural gas consisting largely of methane can be made to produce methyl alcohol and methyl chloride by chlorination. This gas also can be cracked to its constituents carbon and hydrogen which in addition to producing a large quantity of carbon black produces a liquid that could replace the benzine produced from coal.

Ethane can be converted into an alcohol that competes with ethyl alcohol produced by fermentation; also by another process it can be made to produce glycol which competes with glycerin and can be further converted into chemicals whose derivatives are lacquer solvents competing with esters of grain alcohol and fusel oil. This glycol industry is already established on a commercial scale.

Propane can be converted into isopropyl alcohol which competes with ethyl alcohol as a solvent and has the added advantages that it is useless as a beverage and is not taxed as ethyl alcohol, and does not need to be denatured. This alcohol may easily be oxidized to acetone which compares favorably with that produced by fermentation and distillation.

The pentane and butane fractions could find a large number of uses as solvents in the lacquer industry. In fact, all of these hydrocarbons contain those two valuable constituents carbon and hydrogen, which could furnish products valuable for a number of uses. It has been said that in case of a war or serious famine the hydrocarbons contained in natural gas and therefore in the waste products from natural gasoline plants could be converted into butter and sugar and other food products.

Perfume has already been produced from natural gas. Synthetic rubber has been produced from hydrocarbons contained in gas and gasoline. In fact, if time were taken to search out and enumerate the various products that have been obtained from this source this paper would be a volume in itself.

However, economic conditions are not such at present to warrant the expenditure of the vast sums of money necessary to develop and market the products available in the waste gases and only organizations able to weather the enormous research expenditures required can do much toward solving the problem. We can safely predict, however, that sometime in the future gasoline plants will be built and operated in terms of each constituent rather than so many gallons of 90 recovery gasoline.

THE EFFECT OF STEAM ON OIL FRACTIONATION

(Continued from Page 125)

the major difficulty of the correct location for such arrangements. It must not be overlooked that the column temperatures and pressures actually used in the field are in most cases at considerable variance with the conditions selected for design purposes.

Consequently, should the operator decide to increase the distillation pressure, the steam will be found to condense out at a lower point in the column and for this reason, it is general practice to locate a dehydrator just above the feedplate in order to act as a safety means for keeping water out of the stilling section. Should the column pressure be lowered, then the water will settle out at a higher point in the column, making the original dehydrators useless for immediately removing the condensate as formed.

These facts seem to point to another advantage in operating the distillation unit at low pressure, and that is, by designing the unit originally for such operation, the reduction steam will all pass overhead to the partial or single condenser, depending upon which is used, thus eliminating trouble with condensing steam within the column.

Another thought along these lines is that the entire column should always be insulated, regardless of the operating pressure. This is necessary since condensation of the vapors within the column is promoted by radiation of heat from the shell walls between trays, and such a form of condensation is detrimental to efficient rectification.

Still another method for ridding the fractionator of the evil of condensed steam is to use a combination of distillation and condensing pressures. This can be accomplished by operating the first fractionating column at relatively high pressure, as 45 to 50 pounds, in connection with a bottom reboiler. Such a column receives the enriched oil from the preheater, as usual, but as no reduction steam is admitted into the base of the tower, there can be no difficulty from condensing steam in the fractionating section.

Reducing Boiling Points

For reducing the boiling points and helping to flash the various gasoline fractions from the oil, vapors taken from the hot rich oil exchangers are used in lieu of the customary steam. Such vapors will vary in composition for each installation, but in general the percentages of propane, butanes and pentanes and heavier will be approximately equal and totaling 75 per cent by volume. The overhead vapors from this column are handled in the usual manner, finished gasoline being used for endpoint control.

The partially denuded rich oil from the high pressure fractionator then flows to a low pressure still, employing reduction steam, where the vapor pressure of the oil is reduced to the desired point again for absorption. The vapors so removed are, of course, composed of steam and the greater percentage of the heavier gasoline fractions originally removed from the rich gas.

As this gasoline is exceedingly stable, little difficulty or loss results from condensation at two to four pounds, which is the operating pressure on the still itself. No outside reflux is used for controlling the endpoint of these vapors, this being cared for by the amount of reduction steam used and the ensuing natural reflux.

This low pressure gasoline is then dehydrated and preheated to the necessary temperature for reintroduction into the high pressure fractionator. The point of injection into the column is at a point somewhat above the oil feed, but below where the finished gasoline is introduced for endpoint control. Such a system gives the advantages of high pressure condensation, as well as effective stripping of the oil at low pressures, without the annoyance of condensed steam in the rectifying section of the unit.

Steam Temperature

Two schools of practice have sprung up in connection with the reduction steam used in the stilling section of the column. The one employs high pressure plant steam expanded through a valve to the still pressure, while the other operates the pumping equipment at sufficiently high back pressures such that the exhaust steam may be utilized in the still. Both methods are incorrect as practiced.

The expansion of steam without doing mechanical work is obviously unsound economically. Besides, in order to have the temperature of the expanded steam equal to the 320° F. temperature oil found in the lower section of the average still operated at 30 pounds pressure, it is necessary to have available 200 pounds dry steam prior to expansion.

Actually, only the more recent plants have this pressure at hand, and in most instances, even with the use of a separator the steam will be found to contain 1 per cent moisture, which will reduce the temperature after expansion to 310° F. As most plants operate with 125 pounds, the temperature of the expanded steam to the still will be of the order of 299° F. In the column this steam will be superheated, the heat required for this purpose being of course furnished from the hot oil. This effect naturally lowers the still temperature, and low temperatures within the still have already been shown to be highly undesirable.

On the other hand, the use of exhaust steam obtained from pumps is to be avoided in the still because of the large quantities of moisture and lubricating oil which it contains. This is true even of pumps operating on totally dry initial steam.

The use of a steam separator before the still will remove but a fraction of this moisture to say nothing of the oil, consequently a cooling effect as above discussed exists in this case, too, with the added fact that the absorption oil is subject to contamination further by means of the oil. When turbine-driven pumps are used, the oil factor does not exist.

There is no doubt that the exhaust method of supplying the reduction steam is correct, providing certain modifications are made as to its utilization. First, the steam temperature should be equal to, or higher, than the temperature of the oil within the still, and this effect may be obtained by reheating. This can be readily accomplished by using the plant high pressure steam as a heating medium, and this same method should also be employed for heating throttled high pressure steam to the still in instances where such a system must still be used.

Reheating Method

Another method of reheating is to pass the low pressure exhaust or throttled steam through a superheater prior to entry into the still, this arrangement lending itself to supplying reduction steam at temperatures considerably higher than those within the still. Without doubt the most desirable and economic system is to use turbine-driven pumps, supplying the prime mover with initially superheated steam which will give a superheated exhaust steam for the still without additional reheating. Any one of these methods is vastly superior to attempting to let the still reboiler furnish the necessary heat for drying the reduction steam.

Regarding the relative merits of superheated overdry saturated steam in the still, it may be concluded that the two are on a par as far as reduction properties are concerned, provided the temperature of both is higher than that of the oil. Doubtless under some conditions the superheated steam might show a greater resistance toward promoting emulsions in the oil than would be the case for the dry steam.

OIL FIELD EMULSIONS A PROBLEM OF INTEREST

(Continued from Page 34)

fine particles present, conditions are ideal for the formation of emulsions. Oil or oil and water issuing from the fine pores of the oil sands with high velocity provides ample churning, pumping provides more. Mud and oil churn into a thick paste. Salts in the water have little or no effect. Light oil emulsifies as readily as heavy. The emulsion formed cannot be dissolved or washed out but can only be torn out mechanically.

There is no known chemical method of completely breaking an emulsion. The detergents: soap (sodium stearate), washing soda (sodium carbonate) and water glass (sodium silicate) help a little especially if warm. A mud emulsion, floating on a strong soda solution, gradually lets go, the clay particles settling to the bottom but each carrying a tiny droplet of oil down with it. The process requires weeks to free an inch of emulsion. A boiling hot soap or soda solution is probably the most effective chemical treatment that is practical.

The passage of an electric current through an emulsion (Cottrell process) is probably the most effective if not the only effective method of breaking it down. A 10,000-volt transformer, controlled by ballast resistance on the low voltage side, supplies the high voltage necessary. Warming helps mobility. The electric current tears apart the molecules of the films constituting the emulsion and keeps them apart.

The simple experiments above described are exceedingly interesting and instructive to anyone in any way interested in the subject. Despite the fact that the chief phenomena have been known to a few for many years, most technical and scientific men are entirely ignorant of them if one may judge by current literature. Familiarity with them may be acquired by anyone in a few hours with practically no apparatus.

PUMPING WITH CENTRAL POWERS IN SEMINOLE

(Continued from Page 33)

that at least two others can be added later if so desired.

While the first of its kind to be tried in the Seminole area, the plant has been planned very carefully and is now being erected and within from 30 to 45 days sufficient data will be available to permit the Pure Oil Co. and other production companies to decide upon its advantages and perhaps make additional installations of this type.

The main factors that lead to the trial of this type of installation were: The ability to salvage material now on the lease that could be used elsewhere and save more than the cost of the power in-

stallation; the balanced condition of the wells and the 24-hour pumping factor; the use of uniform type tubing, rods, pumps, rod lines, derricks and jacks permitting the purchase of equipment in quantity and standardization of same, and the possibility that the actual lifting cost at each well on the lease will be lowered.

The present condition of the wells in the Misener sand is such that it does not seem probable that water will break into them before the major portion of the remaining oil has been extracted, a condition that does not exist in Wilcox sand wells, for in most of them in the Seminole area there is already a considerable amount of salt water accompanying the oil, which adds to the lifting cost.

It is hoped later to make a further report on this installation with some actual data on the operation of the power and the overall efficiency and lifting costs.

ROCKY MOUNTAIN AREA

(Continued from Page 118)

Meadow Creek, is bottomed at 4,597 feet and cleaning out.

MONTANA

Weather conditions have hampered Montana operators greatly in the past two weeks. Low temperatures and heavy snow in the Kevin-Sunburst area have brought work in that field almost to a standstill, and roads to many of the wildcat locations are blocked by three or four feet of snow. Two wells were completed in Kevin-Sunburst and two new holes were spudded. The L. W. Hill interests completed No. 10 McManus on Section 21-35-2, finding nothing at all in the Ellis sand and water in the Madison lime. The other completion, the Campbell-Morton No. B-2 on Section 13-34-2, showed both gas and oil but will not be commercial without a shot. The Texas Pacific Coal & Oil Co. is still drilling on its deep test and has passed 2,000 feet. The new holes spudded were the Sunrise Oil Co.'s test on Section 11-34-3 and the California Co.'s offset to the Bardley-Campbell well.

Completion of the three wells drilling on the Montana portion of the Buckley Dome has been delayed by storms and blocked roads. The MacDonald well, offsetting the Vanalta producer on the south, will probably be the first to drill in. The Monalta well is still having drilling troubles, but is making some progress and the boilers have been moved back in expectation of striking gas. It is hoped that a fuel supply can be developed in the wells now drilling as the Canadian Government has refused to allow gas from the Vanalta well to be piped across the border. While this may be only a temporary restriction, the operators are changing recently converted equipment back to fuel oil and coal.

Tests Delayed

The Fulton test 30 miles north of Browning, which was expected to spud last week, was unable to get under way on account of cold weather and heavy snow. The Rocky Mountain Oil & Gas Co.'s test on the Teton anticline has been forced to shut down at 850 feet and the Earl Oil Co.'s well on the Sun River structure was also caught by the weather. These wells are all in the mountain region and of unusual interest on account of new theories evolved by geologists who have studied the area. The California Co.'s wildcat on the Crowley structure near Ringling is drilling below 3,150 feet and is thought to be in the Madison lime. This test will be carried to 5,000 feet.

It is reported from Great Falls that Charles Mau and Ralph Arnold have disposed of their interests in the Montana Pacific Oil Corp. to a group of Denver men comprising officials of the Midwest Refining Co. and the Argo Oil Co. The Montana Pacific controls a large block of acreage in the northwestern part of the Pondera Field in addition to holding royalties under the acreage taken over from the company last year by the Midwest Refining Co. According to this report, the Midwest and Argo are not directly involved in the transaction. The company has been organized with a new board of directors which includes A. B. Johnson, president of the Argo Oil Co. and H. C. Bretschneider, vice president of the Midwest Refining Co.

Pipe Line Runs

Daily average production for week ending December 28:

WYOMING	
Salt Creek	27,480
Frannie	670
Big Muddy	2,150
Oregon Basin	4,120
Dutton	30
Elk Basin	710
Ferris	40
Grass Creek	2,050
Greybull	10
Hamilton	980
LaBarge	2,190
Lance Creek	150
Lost Soldier	3,100
Osage	610
Poison Spider	1,510
Rock River	2,220
Rex Lake	100
Lander	440
Simpson Ridge	60
Teapot Dome	40
Mule Creek	...
Total	48,660
MONTANA	
Cat Creek	1,210
Kevin-Sunburst	6,800
Pondera	2,110
Lake Basin	70
Total	10,190
COLORADO	
Moffat	1,192
Fort Collins	1,798
Florence	654
Iles	1,068
Tow Creek	554
Boulder	25
Rangley	100
Total	5,391
NEW MEXICO	
Artesia	746
Cap Rock (Maljamar)	918
Hogback	420
Rattlesnake	869
Table Mesa	114
Jal	70
Hobbs High	560
Total	3,697
Grand total	67,928

GENERAL WEAKNESS NOTED IN THE EAST

(Continued from Page 123)

from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week Ended		
	Dec. 21	Dec. 14	Dec. 7
Gasoline	590,000	500,000	310,000
Naphtha	1,552,000	485,000	278,800
Kerosene	287,400	149,000	674,000
Fuel oil	44,000	5,000	.....
Lubricating oil	2,825,700	1,281,000	2,475,600
Petroleum, ref.	1,239,800	740,000	2,806,400
	Pounds		
Petrolatum	11,000	10,000	132,000
Paraffinwax	3,425,000	2,225,000	831,300
Refined	.....	225,000	400,000
Scale	1,058,000	1,423,000	507,200
Lubricating grease	965,000	988,000	390,000

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended December 21 totaled 1,646,000 bbls., a daily average of 235,143 bbls., compared with 1,784,000 bbls., a daily average of 254,857 bbls., for the previous week and a daily average of 242,500 bbls. for the four weeks ended December 21. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	207,000
Boston	135,000
New York	894,000
Philadelphia	285,000
Total	1,521,000
Daily average	217,286
At Gulf Coast ports—	
Galveston district	40,000
New Orleans and Baton Rouge	45,000
Tampa	40,000
Total	125,000
Daily average	17,857
At all United States ports—	
Total	1,646,000
Daily average	235,143
Daily average four weeks	242,500

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended December 21 totaled 720,000 bbls., a daily average of 102,857 bbls., compared with 424,000 bbls., a daily average of 60,571 bbls., for the previous week, and a daily average of 90,643 bbls. for the four weeks ended December 21. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	91,000
New York	549,000
Philadelphia	80,000
Total	720,000
Daily average	102,857
At Gulf Coast ports—	
All ports	.....
At Atlantic and Gulf Coast ports—	
Total	720,000
Daily average	102,857
Daily average four weeks	90,643

Distribution of total California oil receipts is as follows:

Gasoline	552,000
Fuel oil	168,000

CHICAGO DEMAND FOR GAS OIL AND FUELS

(Continued from Page 122)

present profit, that is, supposing the fuel oil is being held and that it is of the kind suitable for our present equipment and uses.

Lubricating oils have been passed by for the past two weeks or more. Refiners report the situation as unchanged and the demand as quiet.

There is the usual seasonal absence of any news regarding the distributing department. The larger companies still report their business is much larger than last year at this time but the bad weather is now slowing down the consumption, and reports of condition for the last half of December may not compare as favorably with last year, as the season on 1928-29 was ideal up to January 1st. We had all of our cold weather after the beginning of 1929 last season. Fuel oil distributors are most active and deliveries in the city and suburbs have been made at considerable extra trouble and cost owing to the uncleaned streets. Prices were advanced on December 14 in just about enough to cover the increased cost of the oil, the heaviest advances being in the heavy oils. One of the large integrated companies prices its 18-22 delivered in tank trucks at 5 cents and its 24-36 at 5½ cents, which prices are one-quarter to one-half cent below the prices of some of the smaller companies. Distillate or furnace oil prices range from 7½ to 8 cents with gas oil price one-half cent lower.

There has been some talk of an adjustment of the price of gasoline in this city which is 2 cents lower than the normal price but the larger companies state they know nothing of any such intention. The situation as to the general tank wagon scale is still unchanged, nothing said or done that would suggest any early change was being considered.

CORROSION TREATMENT OF REFINERY EQUIPMENT

(Continued from Page 42)

Moreover, it has been pointed out that two-thirds of the gasoline sold in the United States is consumed in warm weather, when there is no chance of corrosion.[3] At the meeting of the American Petroleum Institute in December, 1928, it was stated:

"An official of one of the largest refinery organizations in the United States writes us: 'All the evidence of which I know personally is against the setting of any limit at all, either for hot or cold climates. Diesel oils are marketed in Europe with sulphur content up to 2.5 per cent without trouble. We made some attempt to get experimental evidence on the influence of sulphur on engine corrosion and failed to find any sign of corrosion on fuels up to 0.4 per cent sulphur. Conditions were favorable to corrosion in that the fuel being kerosene there was a high dilution of the lub oil (20 per cent) and in one of the tests water was added to the oil.' The temperature was 12 degrees Centigrade. In other instances that have been brought to our attention, automobiles have been operated for long periods on fuel containing 0.35 per cent, 0.4 per cent, even 0.6 per cent sulphur, without corrosion occurring.

"In England there is no sulphur specification for motor fuels. Last year approximately 20,000,000 gallons of benzol blend fuels containing from 0.4 to 0.6 per cent sulphur was marketed in that country, while in some blends now on the market there, the sulphur runs as high as 0.7 per cent. Five per cent of all the gasoline sold in England at the present time is a benzol blend offered at a premium of 5 cents a gallon though containing 0.2 per cent to 0.5 per cent sulphur. One large benzol producing company in England has for a number of years operated its motor vehicles on straight benzol motor fuel containing 0.4 to 0.5 per cent sulphur without any corrosion being encountered. An officer of the firm has used this fuel exclusively for eight years and in that time has driven his car 130,000 miles, with no signs of corrosion of the motor. Before the war, the percentage of sulphur in English gasoline ran as high as 1.3 per cent. In war time, motor cars were operated without harm on the 'first runnings' from benzene stills, rich in carbon disulphide and analyzing 40 per cent sulphur. Despite this widespread and long continued use of high sulphur motor fuels, corrosion of motors is unknown in England.

"Germany also makes no limitation of the sulphur content of gasoline. Approximately half of the motor fuel sold to German automobile owners are benzol blends containing 0.2 per cent to 1.4 per cent sulphur, some grades having even a 2 per cent sulphur content. At the World Power Fuel Conference recently concluded in London, a speaker from the German Aircraft Research Foundation (Deutsche Versuchsenstalt fur Luftfahrt) stated that while the sulphur maximum in motor fuel for aircraft use should normally be 0.3 per cent, benzol-lignite spirit blends containing 0.5 per cent sulphur were used without hesitation."

Recently Frank[4], in Germany, has shown that acidic substances formed by incomplete combustion are more to be feared as a factor in corrosion than in sulphur.

Diesel engines burn fuel containing up to 8 per cent sulphur with impunity.

There have been a few cases reported of corrosion from lubricating oils.

The corrosion question as it affects internal combustion engines has been much overemphasized.

[3]Egloff and Lowry, Ind. Eng. Chem., 20, 839 (1928).

[4]Private communication.

WORTHINGTON FORMS CALIFORNIA COMPANY

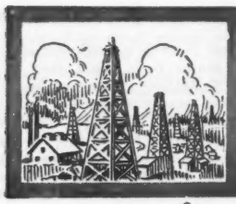
On and after January 2 the interests of the Worthington Pump & Machinery Corp. in the California territory will be served through a local company, the Worthington Machinery Corp. of California, Ltd., with headquarters at Los Angeles and San Francisco.

H. D. Cornell, who has been president of the Worthington Machinery Corp. of Oklahoma, will be president of and direct the new corporation, moving to California for that purpose. George W. Hawkins, who has been director of sales, will also go with Worthington-California, as vice president.

The Worthington Machinery Corp. of California, Ltd., will take over the sales and engineering staff and the warehouse facilities of the Worthington Co., Inc., in California, and will hereafter handle all that territory. This arrangement will enable the carrying of larger and more diversified stock of Worthington products and parts, and give more prompt service to Worthington customers in California.

REFINERY OPERATING

CHICAGO, Dec. 30.—The Globe Refining Co., of Illinois has completed the connections with the Empire-Texas Pipe Line Co. and is now operating its refinery at Lemont on pipe line crude running about 3,500 bbls. daily. The plant had previously been operated with crude oil from the Muskegon, Mich., Field.



REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPHTHA

	Dec. 31		Dec. 24		Dec. 17	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.06½	.07	.06½	.07	.06¾	.07
56-58 450 endpoint	.06¼	.06¾	.06½	.06¾	.06½	.06¾
*58-60 437 endpoint (U. S. Motor)	.0685		.0725		.0725	
*60-62 437 endpoint	†.07		†.0725		.0763	
*60-62 400 endpoint	.074		.0750		.0750	
*64-66 375 endpoint	.08		.08		.08	
68-70 360 endpoint	.08	.08¼	.08⅛	.08¼	.08⅛	.08¼
64-66 437 endpoint (blend)	.07	.07¼	.07	.07¼	.07	.07¼
NORTH TEXAS—						
56-58 450 endpoint	.06¼		.06¼	.06½	.06½	.06¾
58-60 460 endpoint	.06¼		.06¼	.06½	.06½	.06¾
58-60 437 endpoint (U. S. Motor)	.06¼	.06½	.06¼	.06¾	.06½	.07
60-62 400 endpoint	.06¾	.07	.06¾	.07¼	.07¼	.07⅜
64-66 390 endpoint	.07⅜	.07⅝	.07⅜	.07⅝	.07½	.07⅝
64-66 375 endpoint	.07¾	.08	.07¼	.08	.07¾	.08
68-70 360 endpoint	.08	.08¼	.08	.08¼	.08⅛	.08¼
64-66 437 endpoint (blend)	.07	.07¼	.07	.07¼	.07	.07¼
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.07	.07¼	.07¼	.07⅜	.07¼	.07⅜
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.07	.07¼	.07	.07¼	.07	.07¼
PENNSYLVANIA—						
52-54 Naphtha	.07¼	.07½	.07¼	.07½	.07¼	.07½
54-56 Naphtha	.07¼	.07½	.07¼	.07½	.07¼	.07½
58-60 Gasoline	.07¾	.08	.08	.08¼	.08	.08¼
60 Gasoline	.08	.08¼	.08¼	.08½	.08	.08½
62 Gasoline	.08¼	.08½	.08¼	.08½	.08½	.08¾
64 Gasoline	.08½	.08¾	.08½	.08¾	.09	.09¼
68-70 350 endpoint gasoline	.09¾	.10	.09¾	.10	.10¼	.10½
CALIFORNIA—						
58-60 437 endpoint (U. S. Motor) domestic	.09	.10	.09	.10	.09	.10
CHICAGO DISTRICT (Based on Group 3—						
50-52 450 endpoint (Naphtha)	.06½		.06½		.06½	.06¾
56-58 450 endpoint	.06¼	.06⅝	.06⅜	.06⅝	.06⅜	.06⅝
58-60 437 endpoint (U. S. Motor)	.06¼	.06¾	.06¼	.06¾	.06⅜	.07
60-62 400 endpoint	.07	.07¼	.07⅛	.07⅜	.07⅛	.07⅜
64-66 375 endpoint	.07¾	.08	.07¾	.08	.07¾	.08
68-70 360 endpoint	.08¼	.08½	.08¼	.08⅜	.08¼	.08⅜
64-66 437 endpoint (blend)	.06¾	.07	.06⅞	.07	.07	.07¼
GULF COAST (Export)—						
58-60 (U. S. Motor)	.08½		.08½		.08½	
60-62 400 endpoint	.09½		.09½		.09½	
61-63 390 endpoint	.09¾		.09¾		.09¾	
64-66 375 endpoint	.10		.10		.10	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

NATURAL GASOLINE

	Dec. 31		Dec. 24		Dec. 17	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼		.06½	.06⅝	.06⅝	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06		.06⅛	.06¼	.06¼	.06⅜
Grade B, 76-83-9, 375 e.p., rec. 85%	.05⅝		.05¾		.05¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.05⅜		.05½	.05⅝	.05¾	
Grade C, 80-90, 375 e.p., rec. 78%	.05⅜		.05½		.05¾	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼		.06½	.06⅝	.06⅝	.06¾
Grade AA, 80-87.9, 375 e.p., rec. 90%	.06		.06⅛	.06¼	.06¼	.06⅜
Grade B, 76-83.9, 375 e.p., rec. 85%	.05⅝		.05¾		.05¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.05⅜		.05½	.05⅝	.05¾	
Grade C, 80-90, 375 e.p., rec. 78%	.05⅜		.05½		.05¾	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.06¼	.06⅜	.06⅝	.06¾	.06¾	.07
Grade BB, 84-92, 375 e.p., rec. 85%	.06	.06¼	.06¼	.06½	.06¼	.06½
Grade C, 80-90, 375 e.p., rec. 78%	.05¾	.06	.05¾	.06¼	.06	.06¼
CALIFORNIA—						
75-78 375-390 endpoint	.08	.08½	.08	.08½	.08	.08½
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.06¼		.06½	.06⅝	.06⅝	.06¾
Grade AA, 80-87, 375 e.p., rec. 90%	.06	.06⅛	.06¼	.06⅜	.06¾	
Grade B, 76-83.9, 375 e.p., rec. 85%	.05⅜		.05¾		.05¾	
Grade BB, 84-92, 375 e.p., rec. 85%	.05⅜		.05½	.05⅝	.05¾	

BURNING OIL

	Dec. 31		Dec. 24		Dec. 17	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.04⅛	.04½	.04⅛	.04¾	.04⅛	.04¾
42-44 water white kerosene	.04⅜	.04⅝	.04⅜	.05	.04½	.05
NORTH TEXAS—						
41-43 water white kerosene	.04	.04⅛	.04⅛	.04¼	.04⅛	04.¼
40-42 water white kerosene	.03⅞	.04	.04	.04⅛	.04	.04¼
***NORTH LOUISIANA—**						
41-43 water white kerosene	.05		.05		.05	
***ARKANSAS—**						
41-43 water white kerosene	.05		.05		.05	
PENNSYLVANIA—						
43 Kerosene prime water	.05¾	.06	.05¾	.06	.06¼	.06⅜
45 Kerosene water white	.06	.06¼	.06	.06¼	.06⅜	.06½
46 Kerosene water white	.06¾	.06⅞	.06½	.06¾	.06⅝	.06⅞
47 Kerosene water white	.06¾	.07	.06¾	.07	.06¾	.07
300 Mineral Seal	.07	.07¼	.07	.07¼	.07	.07¼
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.05	.05½	.05	.05½	.05	.05½
Engine distillate, 43-44, 445 endpoint	.07	.07½	.07	.07½	.07	.07½
Engine distillate, 42-44, 480 endpoint	.06¾	.07¼	.06¾	.07¼	.06¾	.07¼
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.04⅛	.04⅜	.04⅛	.04⅜	.04⅛	.04½
42-44 water white kerosene	.04½	.04¾	.04½	.04¾	.04¾	.05
GULF COAST (Export)—						
41-43 prime white	.07		.07		.07	
41-43 water white	.08		.08		.08	

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	Dec. 31		Dec. 24		Dec. 17	
OKLAHOMA (Group 3)—						
Below 18 Fuel Oil, per bbl.	.70	.75	.70	.75	.70	.75
18-22 Fuel Oil, per bbl.	.75	.80	.75	.80	.75	.80
20-22 Fuel Oil, per bbl.	.80	.85	.80	.85	.80	.85
22-26 Fuel Oil, per bbl.	.85	.90	.85	.90	.85	.90
24-26 Fuel Oil, per bbl.	.90	.95	.90	1.00	.90	1.00
26-30 Fuel Oil, per bbl.	1.00	1.05	1.00	1.05	1.00	1.05
28-30 Fuel Oil, per bbl. (industrial)	1.15	1.25	1.15	1.25	1.15	1.25
32-36 Gas Oil (industrial)	.02⅞	.03	.02⅞	.03	.02⅞	.03
32-36 Gas Oil (straw color)	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼
36-38 Distillate	.03⅝	.03⅞	.03⅝	.03⅞	.03⅝	.03⅞
38-40 Straw Distillate	.03¾	.04	.03¾	.04	.03¾	.04¼
NORTH TEXAS—						
Below 20 Fuel Oil, per bbl.	.65	.70	.60	.65	.60	.65
24-26 Fuel Oil, per bbl.	.85	.90	.85	.95	.85	.95
32-36 Gas Oil (straw)	.02⅞	.03	.02⅞	.03	.02⅞	.03
38-40 Straw Distillate	.03¾	.04	.03¾	.04	.03¾	.04
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.80	.85	.80	.85	.80	.85
30-32 Gas Oil	.03¼	.03½	.03¼	.03½	.03¼	.03½
***ARKANSAS—**						
33-36 Distillate	.03⅝	.04	.03⅝	.04	.03⅝	.04
30-32 Gas Oil	.03¼	.03½	.03¼	.03½	.03¼	.03½
16-22 Refinery Fuel Oil, per bbl.	.80	.85	.80	.85	.80	.85
GULF COAST (South Texas)—						
Gas Oil	.04	.04¼	.04	.04¼	.04	.04¼
Bunker C Fuel (cargo lots), per bbl.	.65	.70	.65	.70	.65	.70
Bunker C Fuel (small lots)	1.00	1.05	1.00	1.05	1.00	1.05
PENNSYLVANIA—						
30-34 Fuel Oil	.04½	.04¾	.04½	.04¾	.04½	.04¾
36-40 Fuel Oil	.04⅝	.04¾	.04⅝	.04¾	.04⅝	.04¾
CALIFORNIA—						
33-36 Distillate	.03½	.04	.03½	.04	.03½	.04
26-32 Distillate	.02	.02½	.02	.02½	.02	.02½
15-20 Fuel Oil, Bunker (at tide water)	.70	.80	.70	.80	.70	.80
15-20 Fuel Oil (cargo lots), per bbl.	.60	.65	.60	.65	.60	.75
27 plus Diesel, per bbl.	.90	1.05	.90	1.05	.90	1.05
CHICAGO DISTRICT (Based on Group 3)—						
22-26 Fuel Oil, per bbl.	.90	.95	.85	.90	.82½	.87½
18-22 Fuel Oil, per bbl.	.80	.85	.80	.85	.75	.80
28-30 Fuel Oil, per bbl.	1.25	1.30	1.25	1.30	1.17½	1.25
32-36 Gas Oil (zero)	.03¼	.03½	.03¼	.03½	.03¼	.03⅜
32-36 Gas Oil (industrial)	.02¾	.02⅞	.02¾	.02⅞	.02¾	.02⅞
36-38 Distillate	.03⅝	.03¾	.03⅝	.03¾	.03½	.03¾
38-40 Straw Distillate	.03⅞	.04	.03⅞	.04	.03¾	.04

*Louisiana, Arkansas, Mississippi and East Texas delivery.

LUBRICATING OIL AND WAX

	Dec. 31		Dec. 24		Dec. 17	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.06¾	.07	.06¾	.07	.06¾	.07
100 vis., 3 color, 20-25 cold test	.05¾	.06	.05¾	.06	.05¾	.06
150 vis., 3 color, 20-25 cold test	.08¼	.08½	.08¼	.08½	.08¼	.08½
150 vis., 4 color, 20-25 cold test	.07¾	.08	.07¾	.08	.07¾	.08
180 vis., 3 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
180 vis., 4 color, 23-28 cold test	.09¼	.09½	.09¼	.09½	.09¼	.09½
180 vis., 5 color, 23-28 cold test	.09	.09¼	.09	.09¼	.09	.09¼
200 vis., 3 color, 23-28 cold test	.10¾	.11	.10¾	.11	.10¾	.11
200 vis., 4 color, 23-28 cold test	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 5 color, 23-28 cold test	.09¾	.10	.09¾	.10	.09¾	.10
240 vis., 3 color, 25-30 cold test	.14¼	.14½	.14¼	.14½	.14¼	.14½
240 vis., 4 color, 25-30 cold test	.13¼	.13½	.13¼	.13½	.13¼	.13½
240 vis., 5 color, 25-30 cold test	.12¾	.13	.12¾	.13	.12¾	.13
280 vis., 3 color, 25-30 cold test	.16¾	.17	.16¾	.17	.16¾	.17
280 vis., 4 color, 25-30 cold test	.15¾	.16	.15¾	.16	.15¾	.16
280 vis., 5 color, 25-30 cold test	.14¾	.15	.14¾	.15	.14¾	.15
Cylinder Stocks:						
600, steam refined, light green	.10	.12	.10	.12	.10	.12
600, steam refined, dark green	.09	.11	.09	.11	.09	.11
190-200 vis., D color Bright Stock	.41	.42	.41	.42	.41	.42
150-160 vis., D color Bright Stock	.37		.37		.37	
150-160 vis., E color Bright Stock	.32	.35	.32	.35	.32	.35
Waxes:						
124-126 White Crude Scale Wax	.02¾		.03		.03	.03⅛
PENNSYLVANIA—						
34 Neutral	.07½	.07¾	.07½	.07¾	.07½	.07¾
34 Sundebloom	.07½	.07¾	.07½	.07¾	.07½	.07¾
36 Miners' Neutral	.07¼	.07½	.07¼	.07½	.07¼	.07½
150, 3 color	.15½	.16	.15½	.16	.15½	.16
180, 3 color	.21½	.22	.21½	.22	.21½	.22
200, 3 color	.23½	.24	.23½	.24	.23½	.24
220, 3 color	.28½	.29	.28½	.29	.28½	.29
600, steam refined	.25½	.26	.25½	.26	.25½	.26
635, steam refined	.30	.30½	.30	.30½	.30	.30½
650, steam refined	.30½	.31	.30½	.31	.30½	.31
600, Pennsylvania Flash	.31½	.32	.31½	.32	.31½	.32
630, Pennsylvania Flash	.34½	.35	.34½	.35	.34½	.35
600, E filtered	.30½	.31	.30½	.31	.32	.32½
600, D filtered	.35½	.36	.35½	.36	.35½	.36
Pennsylvania Bright Stock	.44	.45	.44	.45	.45	.46
*122-124 White Crude Scale Wax	.03	.03⅛	.03	.03⅛	.03	.03⅛
*124-126 White Crude Scale Wax	.03⅛	.03¼	.03⅛	.03¼	.03⅛	.03¼
GULF COAST (South Texas)—						
No. 2 color, 100 vis., pale oil	.06	.06½	.06	.06½	.06	.06½
No. 3 color, 200 vis., pale oil	.08½	.09	.08½	.09	.08½	.09
No. 3 color, 300 vis., pale oil	.09¾	.10	.09¾	.10	.09¾	.10
No. 3½ color, 500 vis., pale oil	.11	.11½	.11	.11½	.11	.11½
No. 4 color, 750 vis., pale oil	.12	.13	.12	.13	.12	.13
No. 5 to 6 color, 200 vis., red oil	.07	.08	.07	.08	.07	.08
No. 5 to 6 color, 300 vis., red oil	.08½	.09	.08½	.09	.08½	.09
No. 5 to 6 color, 500 vis., red oil	.09	.10	.09	.10	.09	.10
No. 5 to 6 color, 750 vis., red oil	.11½	.12½	.11½	.12½	.11½	.12½
No. 2½ color, 200 vis., pale filtered	.11	.12	.11	.12	.11	.12

*At New York.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

No. 2½ color, 300 vis., pale filtered	.12	.13	.12	.13	.12	.13
No. 2½ color, 500 vis., pale filtered	.14½	.15	.14½	.15	.14½	.15
No. 2½-3 color, 750 vis., pale filtered	.17	.19	.17	.19	.17	.19
CALIFORNIA—						
130 vis., 2½-3 color	.10¼	.10½	.10¼	.10½	.10¼	.10½
200 vis., 2½-3 color	.11½	.11¾	.11½	.11¾	.11½	.11¾
300 vis., 3-3½ color	.13	.13½	.13	.13½	.13	.13½
350 vis., 3½-4 color	.13½	.13¾	.13½	.13¾	.13½	.13¾
400 vis., 3½-4 color	.15	.15½	.15	.15½	.15	.15½
Red Neutral:						
200 vis., 4½-5 color	.11	.11¼	.11	.11¼	.11	.11¼
300 vis., 5-6 color	.12	.12¼	.12	.12¼	.12	.12¼
400 vis., 5-6 color	.13¼	.14	.13¼	.14	.13¼	.14
500 vis., 4½-5 color	.14¼	.15½	.14¼	.15½	.14¼	.15½
500 vis., 5-6½ color	.15	.15¼	.15	.15¼	.15	.15¼
600 vis., 6½ plus color	.16	.16¼	.16	.16¼	.16	.16¼

Note—Bright stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Dec. 31		Dec. 24		Dec. 17	
Gasoline, U. S. Motor, 58-60, 437	.08⅝	.08¾	.08⅝	.08¾	.08¾	.09
Kerosene, water white, 41-43	.07¾		.07¾		.07¾	
*Fuel Oil, Bunker "C," 14-16, per bbl.	1.05		1.05		1.05	
†Fuel Oil, Diesel, 28-30, per bbl.	2.00		2.00		2.00	
Gas Oil, 32-36 gravity	.04¾	.05¼	.04¾	.05¼	.05¼	
25 pale Paraffin Oil	.10½		.10½		.10½	
28 pale Paraffin Oil	.07¼		.07¼		.07¼	
285 red Paraffin Oil	.12½		.12½		.12½	
250 red Paraffin Oil	.11½		.11½		.11½	
225 red Paraffin Oil	.10		.10		.10	
200 red Paraffin Oil	.09¼		.09¼		.09¼	
Refined Wax:						
120-122 a.m.p., per lb.	.03⅞		.03⅞		.038	
125-127 a.m.p., per lb.	.04		.04		.04¼	.04¼
130-132 a.m.p., per lb.	.04⅜		.04⅜		.04½	
133-135 a.m.p., per lb.	.05⅝		.05⅝		.05¾	
135-137 a.m.p., per lb.	.06		.06		.06⅛	
Petrolatum in barrels, carload lots, per pound:						
Dark Green	.01⅞		.01⅞		.01⅞	
Amber	.03⅜		.03⅜		.03⅜	
Extra Amber	.03½		.03½		.03½	
Cream	.06⅜		.06⅜		.06⅜	
Lily White	.07¼		.07¼		.07¼	
Snow White	.08⅜		.08⅜		.08⅜	

*Lighterage 5.0 cents a barrel extra. †Lighterage 6.5 cents a barrel extra.

NEW YORK (BAYONNE) EXPORT PRICES

	Dec. 31		Dec. 24		Dec. 17	
Kerosene, prime white	.07¾		.07¾		.07¾	
Kerosene, water white	.09		.09		.09	
600, steam refined cylinder stocks, in bbls.	.32		.32		.32	
635, steam refined	.34		.34		.34	
650, steam refined	.38		.38		.38	
600, Pennsylvania Flash	.41		.41		.41	
630, Pennsylvania Flash	.45		.45		.45	
600, Warren E	.40		.40		.40	
600, Oil City E	.39		.39		.39	
Light 140-150 Bright Stocks	.52	.53	.52	.53	.54	.56
Dark 140-150 Bright Stocks	.50	.51	.50	.51	.53	.54

LOS ANGELES EXPORT PRICES

	Dec. 31		Dec. 24		Dec. 17	
Kerosene, water white	.04½	.05	.04½	.05	.04½	.05
U. S. Motor Gasoline, 53-55, 437 e.p.	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Oklahoma City—Same as other Mid-Continent price schedule except Empire Pipe Line Co. posts all oil 40 gravity and above at $1.65 on November 24.

Corsicana heavy (January 11)*.....$ .80

Other fields.....See gravity table

*Posted by Magnolia Petroleum Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties—See gravity table.

WEST TEXAS

Iatan*.....Same as North Texas

Crane-Upton-Crockett, Pecos, Winkler and Mitchell.....See gravity table, column 3

Howard and Glasscock.....See gravity table, column 11

Chalk†.....$ .65

*Includes Westbrook Field.
†Posted by Humble Oil & Refining Co.

ARKANSAS-NORTH LOUISIANA

Smackover, below 24 gravity (May 20, 1929).....$ .85

Smackover, 24 gravity and above (May 20, 1929).....1.00

Cotton Valley, below 36 gravity (May 22).....85

Bellevue (May 29, 1929).....1.30

Urania (May 21, 1929).....1.10

East El Dorado (May 22, 1929).....85

Other fields.....See gravity table

Cotton Valley crude about 36 gravity takes same gravity price schedule as shown for North Louisiana and Arkansas crude in Mid-Continent gravity price table.

Note—Smackover, Cotton Valley and Bellevue posted by Standard Oil Co. of Louisiana and Magnolia Petroleum Co.; Urania posted by Louisiana Oil Refining Corp.; East El Dorado, Magnolia Petroleum Co.

GULF COAST

Grade A (May 20)*.....$1.30

Grade B.....See gravity table

Jennings, La. (March 14)†.....1.05

Saratoga, Batson, Dayton (March 14, 1927)‡.....1.30

Refugio¶......70

Markham (March 14)§.....1.00

High Island (December 14)¶.....1.00

*Humble Oil & Refining Co., The Texas Company, Gulf Pipe Line Co., and Sun Pipe Line Co. †Gulf Pipe Line Co. ‡Sun Pipe Line Co. §The Texas Company. ¶Posted by Gulf Pipe Line Co.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.
(Effective May 21, 1929)

Rock Creek, Wyo.....$1.40

Salt Creek.....See gravity table

Big Muddy.....$1.43

Grass Creek, heavy (July 27, 1928).....90

Grass Creek, light.....1.65

Mule Creek.....1.20

Elk Basin.....1.65

Lance Creek.....1.68

Poison Spider (March 14, 1927).....1.00

Notches (March 14, 1927).....65

Rex Lake (February 22).....1.10

Osage.....1.55

Lost Soldier (contract, May 22).....1.05

Hamilton Dome (March 14, 1927).....85

Pedro.....1.25

Greybull.....1.65

Four Bear.....85

Cat Creek (Montana) (July 27, 1928).....1.48

Sunburst (Montana) (May 23, 1929).....1.75

Torchlight.....1.65

Hogback (New Mexico).....1.70

Note—Salt Creek, Osage, Cat Creek, Greybull and Hogback posted by Midwest Refining Co., and the remainder by the Ohio Oil Co. Both companies post Grass Creek light and Elk Basin.

(Continued on Page 130)

CRUDE OIL GRAVITY TABLE

Gravity—	1 Okla., Kans., N. C. Texas	2 No. La. and Arkansas	3 Crane, Upton, Crockett, Winkler, Pecos, Mitchell, Texas crudes, and Lea, N. Mex.	4 Stephens, Ark.	5 Wheeler (Texas Panhandle)	6 Gray County (Texas Panhandle)	7 Carson and Hutchinson (Texas Panhandle)	8 Salt Creek, Wyo.	9 Grade B and Light Crude (G. Coast)	10 Somerset (South Central Texas)	11 Howard and Glasscock, W. Tex.
24 and above	....	....	....	....	....	....	....	....	....	....	....
Below 24	....	....	....	....	....	....	....	....	....	....	....
Below 25	.85	....	.70	....	....	....	....	....	1.15	....	.70
25 to 25.9	.90	....	.74	....	....	....	....	....	1.18	....	.74
26 to 26.9	.95	....	.78	....	....	....	....	....	1.21	....	.78
27 to 27.9	1.00	....	.82	....	....	....	....	....	1.24	....	.82
Below 28	....	1.00	....	.90	.90	.90	.90	....	....	....	....
28 to 28.9	1.05	1.05	.86	.94	.90	.90	.90	....	1.27	....	.84
29 to 29.9	1.10	1.10	.90	.98	.90	.95	.90	1.10	1.30	....	.86
30 to 30.9	1.15	1.15	.94	1.02	.95	1.00	.90	1.15	1.33	....	.88
31 to 31.9	1.20	1.20	.98	1.06	1.00	1.05	.90	1.20	1.36	....	.90
32 to 32.9	1.25	1.25	1.02	1.10	1.05	1.10	.95	1.25	1.39	1.05	.92
33 to 33.9	1.30	1.30	1.06	....	1.10	1.15	1.00	1.30	1.42	1.07	.94
34 to 34.9	1.35	1.35	1.10	....	1.15	1.20	1.05	1.35	1.45	1.09	.96
35 to 35.9	1.40	1.40	1.14	....	1.20	1.25	1.10	1.40	1.48	1.11	.98
36 to 36.9	1.45	1.45	1.18	....	1.25	1.30	1.15	1.45	....	1.13	1.00
37 to 37.9	1.50	1.50	....	....	1.30	1.35	1.20	1.50	....	1.15	....
38 to 38.9	1.55	1.55	....	....	1.35	1.40	1.25	....	....	1.17	....
39 to 39.9	1.60	1.60	....	....	1.40	1.45	1.30	....	....	....	....
40 to 40.9	1.65	1.65	....	....	1.45	1.50	1.35	....	....	....	....
41 to 41.9	1.70	1.70	....	....	1.50	1.55	1.40	....	....	....	....
42 to 42.9	1.75	1.75	....	....	1.55	1.60	1.45	....	....	....	....
43 to 43.9	1.80	1.80	....	....	1.60	1.65	1.50	....	....	....	....
44 and above	1.85	1.85	....	....	1.65	1.70	1.55	....	....	....	....

Column 1, Note—Magnolia Petroleum Co. posted schedule May 20, 1929, making price below 26 gravity 70 cents per barrel, 26-26.9 gravity 75 cents, 27-27.9 gravity 85 cents, 28-28.9 gravity 90 cents, 29-29.9 gravity 95 cents, 30-30.9 gravity $1.05, and 31-31.9 gravity $1.15, with balance of the price schedule as shown above. Top price of Empire Pipe Line Co., effective November 14 for Oklahoma City crude oil, is for 40° and above.

Oklahoma—Carter Oil Co., Prairie Oil & Gas Co., Sinclair Oil & Gas Co., Gypsy Oil Co., The Texas Company, May 20.

North Central Texas—Including Ranger, Mexia, Powell, Richland, Wortham, Lytton Springs, Currie, Nocona and Moran, Prairie Oil & Gas Co., Sinclair Oil & Refining Co., Humble Oil & Refining Co., The Texas Company and Gulf Refining Co., May 20.

Kansas—Prairie, Sinclair, The Texas Company and Carter, May 20.

Column 2—Arkansas and North Louisiana—(Caddo, Bull Bayou, Crichton, Cotton Valley above 36 gravity, DeSoto, Haynesville, Homer and El Dorado only) May 22. Standard Oil Co. of Louisiana, Louisiana Oil Refining Co., Gulf Refining Co., Magnolia Petroleum Co., schedule applies to Pine Island, Haynesville, Bull Bayou, Louisiana and El Dorado, Ark., light crude.

Column 3—Humble Oil & Refining Co. and Magnolia Petroleum Co., May 20.

Column 4—Atlantic Oil Producing Co., Prairie Oil & Gas Co., Louisiana Oil Refining Corp., May 21, 1929.

Columns 5, 6 and 7—Humble Oil & Refining Co., Magnolia Petroleum Co., May 20, 1929.

Column 8—Midwest Refining Co., May 20, 1929. All crude over 37 gravity $1.50 per barrel.

Column 9—Humble Oil & Refining Co., May 20, 1929 (schedule ends 35 and above).

Column 10—Grayburg Pipe Line Co. and Pioneer Oil & Refining Co., April 7.

Column 11—Humble Oil & Refining Co., November 26.

CALIFORNIA CRUDE OIL PRICES

Standard Oil Co.-Union Oil Co. (Effective October 31, 1929)

Gravity—	1 Salt Lake, Newport, Summerland, Lawndale, Los Angeles, Fullerton, Richfield, Torrance, Olinda-Brea, Alamitos Heights, Huntington Beach, Signal Hill (Nov. 8) Athens, Inglewood, Rosecrans-Dominguez, Watsonville	2 Whittier, La Habra, Coyote Hills	3 Midway-Sunset, Elk Hills, Lost Hills, Belridge, Buena Vista Hills	4 Montebello	5 Santa Fe Springs (Nov. 8)	6 Santa Maria, Coalinga	7 Wheeler Ridge, Fruitvale	8 Orcutt, Ventura, Rincon	9 Ventura Ave.,* Potrero†	10 Elwood Terrace	11 Seal Beach (Nov. 4)
14 to 14.9	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
15 to 15.9	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
16 to 16.9	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
17 to 17.9	.70	.70	.50	.70	....	.50	.50	.65	.40	....	.70
18 to 18.9	.75	.75	.56	.70	....	.56	.56	.70	.40	....	.75
19 to 19.9	.80	.80	.62	.75	....	.62	.62	.70	.40	....	.80
20 to 20.9	.85	.84	.68	.80	....	.68	.68	.70	.40	....	.85
21 to 21.9	.89	.88	.74	.85	.89	.74	.74	.86	.40	....	.89
22 to 22.9	.93	.91	.80	.90	.92	.80	.80	.87	.40	....	.93
23 to 23.9	.97	.94	.85	.95	.95	.85	.85	.90	.40	....	.97
24 to 24.9	1.01	.97	.90	.98	.98	.88	.88	.94	.40	....	1.01
25 to 25.9	1.05	1.00	.95	1.01	1.01	.91	.91	.98	.60	....	1.05
26 to 26.9	1.09	1.04	1.00	1.04	1.04	.94	.94	1.02	.60	....	1.09
27 to 27.9	1.13	1.08	1.05	1.07	1.07	.98	.97	....	.60	....	1.13
28 to 28.9	1.17	1.12	1.10	1.10	1.10	1.02	....	....	.60	....	1.17
29 to 29.9	1.21	1.16	1.16	1.13	1.15	1.06	....	....	.60	....	1.21
30 to 30.9	1.25	1.20	1.22	1.16	1.20	1.10	....	....	.60	....	1.25
31 to 31.9	1.30	....	1.28	....	1.25	1.14	....	....	.60	....	1.30
32 to 32.9	1.35	....	1.34	....	1.30	1.18	....	....	.60	....	1.35
33 to 33.9	1.41	....	1.40	....	1.35	1.22	....	....	.60	....	....
34 to 34.9	1.47	....	1.46	....	1.40	1.26	....	....	.60	1.16	....
35 to 35.9	1.53	....	....	....	1.45	1.30	....	....	.60	1.22	....
36 to 36.9	1.59	....	....	....	1.50	....	....	....	.60	1.28	....
37 to 37.9	1.65	....	....	....	1.55	....	....	....	.60	1.34	....
38 to 38.9	1.71	....	....	....	1.60	....	....	....	.60	1.40	....
39 to 39.9	1.77	....	....	....	1.65	....	....	....	.60	1.46	....
40 to 40.9	1.83	....	....	....	....	....	....	....	.60	1.52	....
41 to 41.9	1.89	....	....	....	....	....	....	....	.60	1.58	....
42 to 42.9	1.95	....	....	....	....	....	....	....	.60	1.64	....

*October 22. †Sunset Pacific Oil Co., October 26.

Kern River, Newhall-McKittrick, Mount Poso and Round Mountain 11 to 13.9 gravity 45 cents, 14 gravity and above 50 cents, effective October 2, 1929. On December 1, 1928, the Union Oil Co. posted Midway-Sunset, Elk Hills, Buena Vista, Lost Hills and Coalinga crude as follows: 11 to 13.9 gravity at 45 cents, 14 gravity and above 50 cents.

Column 1—Signal Hill, Seal Beach, Huntington Beach and Alamitos Heights crude, 14 to 32.9 gravity, inclusive; Richfield, Olinda-Brea and Fullerton, 14 to 30.9 gravity; Torrance and Inglewood, 14 to 28.9 gravity; Dominguez and Athens-Rosecrans, 24 to 42.9 gravity.

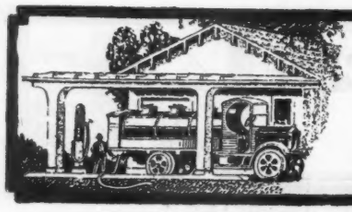
Column 2—Whittier crude, 14 to 22.9 gravity; Coyote Hills, 14 to 30.9 gravity.

Column 3—Kern River, Newhall and McKittrick, 11 to 19.9 gravity; Midway-Sunset, Buena Vista and Elk Hills, 11 to 33.9 gravity; Lost Hills, 11 to 34.9 gravity; oil below 14 gravity posted at 45 cents.

Column 6—Oil below 14 gravity posted at 45 cents.

Columns 8 and 9—Posted by Union Oil Co. only.

Kettleman Hills, 55 gravity and above, $1.65 (posted by Standard Oil Co. of California).



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns Dec. 31

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Chicago†	17.0	18.0	3.0	13.0
Decatur, Ill.	19.2	20.2	3.0	13.1
E. St. Louis	15.4	15.4	3.0	12.2
Joliet	19.4	20.4	3.0	13.3
Peoria	19.2	20.2	3.0	13.1
Quincy	19.2	20.2	3.0	12.9
Davenport, Ia.	19.5	20.5	3.0	13.3
Des Moines	19.5	20.5	3.0	13.3
Keokuk	19.5	20.5	3.0	13.3
Sioux City	19.1	20.1	3.0	12.9
Duluth, Minn.	20.5	21.5	3.0	13.9
Mankato	20.1	21.1	3.0	13.7
Minneapolis	20.2	21.2	3.0	13.9
LaCrosse, Wis.	19.2	20.2	2.0	14.0
Milwaukee	18.1	19.1	2.0	12.9
Madison	18.3	19.3	2.0	13.1
Detroit, Mich.	19.8	20.8	3.0	14.7
Grand Rapids	19.7	20.7	3.0	14.6
Saginaw	19.9	20.9	3.0	14.8
Evansville, Ind.	20.0	21.0	4.0	14.0
Fort Wayne	20.4	21.4	4.0	14.4
Indianapolis	20.2	21.2	4.0	14.2
South Bend	20.4	21.4	4.0	14.4
Fargo, N. D.	21.9	22.9	3.0	15.9
Huron, S. D.	21.3	22.3	4.0	14.7
Sioux Falls	20.1	21.1	4.0	14.4
K. C., Mo.*	18.9	19.9	3.0	11.6
Springfield*	18.8	19.8	3.0	12.5
St. Louis*	17.9	18.9	2.5	12.3
St. Joseph	18.5	19.5	2.0	12.2
Wichita, Kans.	17.8	18.8	3.0	11.8
Bartlesville, Okla.	18.5	19.5	4.0	11.5

*State tax 2 cents; remainder city tax.
†Effective February 20, discounts on Q.D.A. in Chicago district 2 cents off service station price on purchases of 500 gallons or more per month and 4 cents on purchases of 1,000 gallons or more per month.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	14.7	12.9
V. M. & P. Naphtha	16.7	13.9
Cleaner's naphtha	17.0	14.9
Stanisol	17.0	15.4

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

Less than 100 gallons	9.0
100 to 349 gallons	8.0
350 gallons or more	7.5

Note—Outside Chicago furnace oil discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

The following quantity discounts from the service station price are allowed on monthly sales of gasoline; 2,000 gallons or less, 2 cents; more than 2,000 and less than 6,000 gallons, 2½ cents; more than 6,000 gallons, 3 cents. Discounts are allowed each month and they are not cumulative. Delivery tickets showing date and quantity delivered must be sent to the seller before the tenth of the month to secure the discount on the previous month's purchases.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Dallas, Tex.	17.0	21.0	4.0	12.0
Fort Worth	17.0	20.0	4.0	12.0
Houston	15.0	19.0	4.0	11.0
San Antonio	15.0	19.0	4.0	11.0
El Paso	16.0	20.0	4.0	16.0
Texarkana	17.0	19.0	4.0	12.0
Muskogee*	15.0	17.0	4.0	10.0
Okla. City*	17.0	20.0	4.0	10.0
Tulsa*	15.0	19.0	4.0	10.0
Ft. Smith, Ark.	15.0	17.0	5.0	12.0
Little Rock	17.0	19.0	5.0	13.0

*Gasoline tank wagon price to dealers 2 cents under posted tank wagon.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Denver, Colo.	18.0	21.0	4.0	15.5
Pueblo	18.0	21.0	4.0	15.5
Grand Junction	22.5	25.5	4.0	19.0
Casper, Wyo.	19.0	22.0	4.0	14.0
Cheyenne	20.5	23.5	4.0	15.5
Butte, Mont.	25.5	28.5	5.0	20.0
Helena	25.5	28.5	5.0	20.0
Salt Lake, Utah	21.0	24.0	3.5	17.0
Albu'que, N. M.	20.0	22.0	5.0	17.0
Boise, Idaho	23.5	26.5	4.0	19.0
Twin Falls	23.5	27.5	4.0	19.0

PENNSYLVANIA—DELAWARE AND PART NEW ENGLAND

The Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Pittsburgh, Pa.	15.0	*21.0	...	13.0
Philadelphia	15.0	*21.0	...	13.0
Scranton	15.0	*21.0	...	13.0
Allentown	15.0	*21.0	...	13.0
Altoona	15.0	*21.0	...	13.0
Erie	15.0	*19.0	...	13.0
Dover, Del.	18.0	20.0	3.0	13.0
Wilmington	18.0	20.0	3.0	13.0
Springf'd, Mass.	18.0	20.0	2.0	15.0
Worcester	18.0	20.0	2.0	15.0
Boston	18.0	20.0	2.0	15.0
Providence, R.I.	18.0	20.0	2.0	13.0
Hartford, Conn.	18.0	20.0	2.0	14.0
New Haven	18.0	20.0	2.0	15.0

*Includes tax of 4.0 cents. Pennsylvania tax is collected by the dealer and paid by him direct to the State. The Atlantic Refining Co. recognizes a 2-cent per gallon discount on gasoline from its posted tank wagon markets on sales to dealers for purposes of resale. The Atlantic Refining Co. also recognizes a maximum discount of 2 cents per gallon on gasoline to commercial accounts under contract for one year.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Albany, N. Y.	18.0	20.0	2.0	15.0
New York*	16.0	18.0	2.0	15.0
Buffalo	18.0	18.0	2.0	14.0
Rochester	18.0	20.0	2.0	14.0
Syracuse	18.0	20.0	2.0	15.0
Boston, Mass.	18.0	20.0	2.0	15.0
Augusta, Me.	20.0	22.0	4.0	15.0
Manch't'r, N. H.	20.0	22.0	4.0	15.0
Burlington, Vt.	19.0	20.0	4.0	15.0

*Prices in steel barrels.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atlanta, Ga.	16.0	20.0	4.0	16.5
Augusta	20.0	22.0	4.0	15.5
Macon	21.0	23.0	4.0	16.5
Savannah	22.0	24.0	4.0	15.5
Birm'ham, Ala.	17.0	19.0	4.0	13.0
Mobile	18.0	20.0	4.0	15.0
Montgomery	19.0	21.0	4.0	16.5
Clarks'le, Miss.	18.0	20.0	5.0	12.5
Jackson	19.0	21.0	5.0	13.0
Natchez	20.5	20.5	5.0	14.0
Gulfport	22.5	24.5	5.0	14.0
Vicksburg	20.5	22.5	5.0	14.0
Jack'ville, Fla.	22.0	24.0	6.0	14.5
Miami	23.0	25.0	6.0	15.5
Pensacola	18.0	20.0	6.0	14.5
Tampa	20.0	22.0	5.0	14.5
Lexington, Ky.	20.0	22.0	5.0	15.5
Covington	19.0	20.0	5.0	15.5
Louisville	21.0	23.0	5.0	13.0
Ashland	20.0	21.0	5.0	15.5
Catlettsburg	20.0	21.0	5.0	15.5

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. Pensacola and Mobile taxes include 1-cent city levy. Gulfport tax includes privilege tax of 2 cents in addition to state tax.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

PACIFIC COAST TERRITORY

Standard Oil Co. (California)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
San Francisco	20.0	24.0	3.0	15.5
Los Angeles	19.5	23.5	3.0	15.5
Reno, Nev.	24.0	26.0	4.0	19.0
Portland, Ore.	20.5	24.5	3.0	16.5
Seattle, Wash.	20.5	23.5	3.0	16.5
Tacoma	20.5	23.5	3.0	16.5
Spokane	24.5	27.5	3.0	20.5
Phoenix, Ariz.	18.0	22.9	4.0	20.5

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Omaha	20.25	22.25	4.0	13.25
McCook	21.75	23.75	4.0	14.75
Norfolk	20.75	22.75	4.0	13.75
N. Platte	21.75	23.75	4.0	14.50
Scottsbluff	21.75	23.75	4.0	14.25

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Atlantic City	16.0	18.0	2.0	13.0
Newark, N. J.	17.0	19.0	2.0	13.0
Annapolis, Md.	19.0	21.0	4.0	13.0
Baltimore	19.0	21.0	4.0	13.0
Cumberland	20.0	22.0	4.0	13.0
Washington	17.0	19.0	2.0	12.8
Danville, Va.	21.0	23.0	5.0	12.0
Norfolk	20.0	22.0	5.0	12.0
Petersburg	21.0	23.0	5.0	13.0
Roanoke	21.0	23.0	5.0	13.0
Richmond	20.0	22.0	5.0	13.0
Charles'n, W.Va.	19.0	21.0	4.0	13.0
Keyser	20.0	22.0	4.0	13.0
Parkersburg	19.0	21.0	4.0	12.0
Wheeling	20.0	22.0	4.0	13.0
Charlotte, N. C.	17.0	19.0	5.0	13.0
Hickory	21.0	23.0	5.0	13.0
Mt. Airy	21.0	23.0	5.0	13.0
Salisbury	19.0	21.0	5.0	13.0
Charleston, S.C.	21.0	23.0	6.0	13.0
Columbia	22.0	24.0	6.0	13.0

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
Ohio points*	18.0	19.0	4.0	†12.0

*Dealers and commercial accounts 2 cents under tank wagon.
†Service station price 14 cents.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax	tank wagon
N. Orleans, La.*	18.0	20.0	5.0	13.0
Baton Rouge	16.0	18.0	4.0	14.5
Alexandria	19.0	21.0	5.0	16.0
Lafayette†	20.0	22.0	5.0	14.0
Lake Charles†	20.5	22.5	5.0	16.0
Shreveport	17.5	19.5	4.0	15.0
Knoxv'le, Tenn.	20.0	22.0	5.0	16.0
Memphis	18.0	20.0	5.0	12.5
Chattanooga	20.0	22.0	5.0	14.0
Nashville	19.0	19.0	5.0	16.0
Bristol	21.0	22.0	5.0	14.0
Lt. Rock, Ark.	19.0	21.0	5.0	13.0

*Tax of 5 cents includes city tax of 1 cent. Louisiana Kerosene prices include 1-cent state tax and 1-cent parish tax.
†Includes 1-cent parish tax.

TANK WAGON CHANGES

Standard Oil Co. of Kentucky—Effective September 20 the Standard Oil Co. of Kentucky established a tank wagon price of 19 cents and a service station price of 20 cents at Covington, Ky.

Standard Oil Co. of Louisiana—Effective December 21, Standard Oil Co. of Louisiana reduced posted tank wagon and service station prices 1 cent at New Orleans, La.

PALE AND RED OILS SOFTER AT HOUSTON

HOUSTON, Tex., Dec. 31.—Following a period of inactive demand Gulf Coast pale and red oils at the opening of the week were considerably softer in tone. An effort on the part of some to reduce stocks to a minimum before the opening of the new year has resulted in some quiet shading of prices on nearly all grades although the general market outwardly is being held at the same level at which it has been for several weeks. The shading so far has brought very little increase in business with inquiries continuing slow. As is usually the case at this time of the year buyers are not inclined to do any more business than necessary throughout the holidays.

Other Gulf Coast products are at a standstill with the possible exception of kerosene which is finding a fairly ready seasonal movement. This product is quoted firmly at Gulf refineries at 6 cents. Fuel oils are weak but there were no new developments during the week, Bunker C being available as low as 60 cents but not accepted readily.

TO SPEND $6,000,000

SAN FRANCISCO, Calif., Dec. 28.—The Associated Oil Co. will spend $6,000,000 in 1930 improving manufacturing facilities at its refineries located at Avon and Watson, Calif. Cracking units are to be installed at both refineries to round out a complete operation.

The investment in refinery expansion is part of a general enlargement program which according to William F. Humphrey, president of the Associated company, will mean an expenditure of $20,000,000 in all phases of the company's operation during 1930.

P. L. CRAIG DEAD

Percy L. Craig, New Castle, Pa., financier, oil company head and honorary president of the State Sabbath School Association, died at Clifton Springs, N. Y., where for two months he had been undergoing treatment. He became ill more than a year ago. He was 65 years old. Mr. Craig was president of the Freedom Oil Works at Freedom, Pa.

CRUDE OIL PRICES

(Continued from Page 129)

SOUTH CENTRAL AND SOUTHWESTERN TEXAS

Luling (May 2)*	$ .90
Mirando (May 20, 1929)†	.90
Salt Flat (May 20, 1929)‡	1.25
Rockdale Minerva (April 15)	
Below 28 gravity	1.25
28-38.9 gravity	1.27
39-39.9 gravity	1.29
40 and above	1.31
Thrall‡	
Callihan (May 15)	1.75
Lytton Springs (Lockhart)	See gravity table
Somerset	See gravity table

*Posted by Magnolia Petroleum Co.
†Magnolia Petroleum Co., Humble Oil & Refining Co., Crown Central Pipe Line Co.
‡Thrall prices same as North Central Texas less 19½ cents per cwt. freight.
§Humble Oil & Refining Co.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective October 1, 1929)

Penna Grade Oil in New York Transit Lines (New York)	$3.05
Bradford District Oil in National Transit Lines (Pennsylvania)	3.05
Penna Grade Oil in National Transit Lines (Pennsylvania)	3.05
Penna Crude Oil in Southwest Pennsylvania Lines (West Virginia)	3.00
Penna Grade Oil in Eureka Pipe Line Lines (Pennsylvania)	2.90
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio)	2.70
Cabell Grade Oil in Eureka Pipe Line Lines (West Virginia) (May 22, 1929)	1.75
Corning 35-cent Grade Oil in Buckeye Pipe Line Co.'s Line (May 22, 1929)	1.70
Corning 25-cent Grade Oil in Buckeye Pipe Line Co.'s lines (May 22, 1929)	1.80
Somerset Oil in Cumberland Pipe Line Lines (Kentucky) (Nov. 12, 1929)	1.55
Ragland Grade Oil in Cumberland Pipe Line Lines (Kentucky) (Jan. 29)	.60
Wayne district oil in Cumberland Pipe Lines	1.42

MIDDLE WESTERN STATES

Ohio Oil Co.
(Effective May 21, 1929)

Lima	$1.80
Wooster	1.90
Illinois	1.75
Indiana	1.57
Princeton	1.75
Plymouth	1.28
Waterloo (November 17, 1926)	1.35
Western Kentucky	1.68
Dundee, Mich. (Sept. 17, 1929)‖	
	....Same as Mid-Continent gravity scale
Upper and Lower Traverse sands, Mich.‖	
	....Same as Mid-Continent gravity scale
Midland, Mich. (December 6, 1929)*	$1.50
Saginaw, Mich., Saginaw Sand (February 10)†	1.89
Saginaw, Mich., Berea Sand (February 10)†	1.79
Cumberland, Clay, Barren, Clinton and Monroe Counties, Kentucky (March 15)‡	1.50
Oil in line in Stoll Oil Refinery Co. in Oil City, Ky. (Oct. 7, 1929)§	1.70
Oil Springs (Canada)¶	2.27
Petrolia (Canada)¶	2.20

*Posted by Pure Oil Co.
†Posted by Sun Oil Co.
‡Posted by Paragon Revelopment Co.
§Posted by Stoll Oil Refining Co.
¶Posted by Imperial Oil Co., Ltd.
‖Posted by Standard of Indiana for boat shipment.

MEXICAN CRUDE

Panuco*	$ .64

*Based on November transactions for deliveries during November and December. Price exclusive of taxes.

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MOTOR OIL

Oil Industry Entering Promising Year

Greater Stability in Operations Considered Good Augury in Financial Circles. Outstanding Mergers of 1929

After experiencing a year marked by further progress in various departments and one of better than average profits, the petroleum industry, says the Wall Street Journal, is entering 1930 under conditions which promise a continuance of constructive effort and remunerative operations. The close of 1929 finds a greater degree of stability than in recent years and a situation which contains good augury for the future, provided co-operative effort of the past year is not only continued but extended during 1930.

Marked progress has been made in the solution of problems in the various phases of the industry. Conservation of crude oil was again the keynote of these activities, but there were several other achievements which, while less prominent to the public eye, were of vital importance to the industry. The proposed unit plan of developing new oil areas, creation and functioning of the oil export group, the code of marketing ethics for the eradication of malpractices in distribution of refined products, and the proposed adjustment of refinery operations to actual demand of consuming markets, were a few of the constructive developments started during 1929.

From the financial aspect, oil companies in general operated on a profitable basis. A compilation of net profits of 26 oil companies for the first six months of 1929 showed a total of $86,173,938, or about 80 per cent more than the $48,541,232 reported for the corresponding period of 1928. For the first nine months aggregate net profit for 24 companies reporting was $114,260,428, an increase of almost 37 per cent over the $83,660,545 in the like period of 1928, and about 87 per cent more than the $61,164,406 for the same companies in the corresponding 1927 months.

This was a fair index of operating results the past year, although several of the important oil units, particularly the larger Standard Oils, The Texas Corporation, Gulf Oil and Royal Dutch, do not submit reports prior to their annual statements. It is safe to say that the net profit of these larger companies was considerably better than in the preceding year and probably surpassed the exceptionally profitable 1926 year.

These increased earnings were chiefly a result of the closer stabilization of oil prices. Although the production of crude oil and products continued to expand, there was a further notable increase in consumption, particularly of gasoline, the domestic demand for which was almost 14 per cent in excess of last year.

Mergers During Year

Several mergers of oil properties took place, continuing the trend of integration, and the coming year will undoubtedly record continued progress in this respect. Early in the year Standard Oil Co. of New Jersey acquired control of Beacon Oil Co., thereby extending its marketing system into New York and New England. In December it sought to acquire Anglo-American Oil Co. through an offer of one share of $5 preferred stock of Standard Oil Export Corp., with dividend guaranteed by the four large subsidiaries of the Jersey company, for 5 5-9 shares of Anglo-American Oil.

In association with I. G. Farbenindustrie, the Jersey company also is organizing the Standard-I. G. Co., which will take over development on a worldwide basis of the hydrogenation patents for the manufacture of refined oils from both petroleum and coal.

Marland Oil Co., extending its operations over wider territory, took over Continental Oil Co. of Maine, and assumed the name of the Continental Oil Co., organized under Delaware laws. One of the most notable expansion programs was that of Shell Union Oil Corp., which acquired the distributing system of New England Oil Refining Co. Thus established in the marketing situation in New England States, Shell Union proceeded to acquire distributing properties in New York City, along the eastern seaboard, in Texas and also in the interior of the United States.

California Co. Acquires Utility

With the opening up of the great Kettleman Hills oil area in California, in which it holds 50 per cent of the acreage in fee, Standard Oil Co. of California took steps to market the immense gas production which it has secured. Early in October it purchased control of Pacific Public Service Co., of which Coast Counties Gas & Electric Co. is a subsidiary and a distributor of manufactured gas, thus marking a new development in the entry of the oil company into the public utility field.

An outstanding acquisition of the year was that of Pan American Petroleum &

TRANSACTIONS IN OIL SHARES ON NEW YORK STOCK EXCHANGE

Quotations Compiled by Francis, Bro. & Co., Members of New York Stock Exchange, Kennedy Building, Tulsa, Okla.

1929 High	1929 Low	Week ended December 24 Sales	Week ended December 24 High	Week ended December 24 Low	Week ended December 24 Close	Stocks		Outstanding capital	Par value	Div. rate	Last paid	1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low
42⅝	17½	900	19	18½	19	Amerada Corp.	(sh)	922,075	N.P.	50cQ	7-31-29	32⅞	24¼	37⅝	27⅝	43⅞	27⅛
64¾	12½	600	22⅞	21¼	21¼	American Republics Corp.	(sh)	209,180	N.P.	.....	3-20-29	74	39⅞	82⅛	35⅛	85	51⅛
47¼	40½	No. sales.				Associated Oil		$57,260,300	$25	50cQ	9-30-29	60	44¾	50¼	35	53⅜	37½
77⅞	30	7,000	38⅜	36⅞	37⅛	Atlantic Refining		$50,000,000	$25	25cQ*	9-16-29	128⅜	97	131⅜	104	66⅜	50
49⅛	20	4,500	22⅞	22½	22⅝	Barnsdall Corp.		$45,235,650	$25	50cQ	8- 6-29	33½	23½	35½	20¾	53	20
47⅛	18	8,300	22½	22	22⅛	Continental Oil of Delaware	(sh)	4,741,554	N.P.	.....	3-31-27	..	..	..	..	..	..
94⅜	42¼	600	48½	48	48	General Asphalt		$20,785,400	$100	.....	.....	94½	50	96¾	65	94⅞	68
109	23	1,400	53	50½	52	Houston Oil		$25,000,000	$100	.....	.....	72	50¼	175⅝	60⅛	167	79
39⅜	17¾	1,200	22⅝	21¾	22	Independent Oil & Gas	(sh)	1,333,572	N.P.	50cQ	7-31-29	34	19⅝	32¾	17⅝	38⅜	21¾
53	13⅛	3,100	18⅛	17⅛	17⅞	Indian Refining		$12,307,370	$10	.....	5-31-24	12¾	7½	12⅛	7⅝	39⅝	9
38⅜	16½	No sales.				Lago Oil & Transport	(sh)	3,992,122	N.P.	.....	5- 1-27	25⅞	16½	37¾	20½	39⅛	27⅜
18	7	2,600	8¾	8⅝	8⅝	Louisiana Oil Refining	(sh)	1,190,063	N.P.	.....	.....	19⅞	12	18⅛	10	19¾	9⅜
18½	6	1,200	6½	6¼	6¼	Maracaibo Oil	(sh)	330,000	N.P.	.....	.....	28	16½	22⅜	12	25½	12½
69⅜	9¼	3,100	17⅛	16½	16½	Mexican Seaboard	(sh)	1,276,873	N.P.	.....	12-15-20	13¾	6	9¼	3	73	4⅝
39⅞	22¼	400	26½	25⅝	26½	Mid-Continent Petroleum	(sh)	1,857,912	N.P.	50cQ	8-15-29	37	20½	39⅜	25½	44½	25⅛
5⅛	1½	No sales.				Middle States Oil		$24,298,850	$10	.....	7- 1-23	2½	½	3¾	1⅝	7⅜	2⅜
69	40¼	No sales.				Pan American P. & T.		$50,084,700	$50	.....	10-20-27	76½	56⅛	65⅞	40⅛	54⅞	38¼
69¼	40½	600	58½	57¾	58½	Pan American P. & T. "B"		$121,105,050	$50	.....	11-15-24	78⅜	56⅞	66⅜	40¼	58⅞	37¾
18½	13⅝	No sales.				Pan American Western "B"	(sh)	400,000	N.P.	.....	1-30-27	46	30	37⅞	16¾	28⅜	15½
15¼	3	No sales.				Panhandle P. & R.	(sh)	199,370	N.P.	.....	.....	32	4½	18⅞	8	21⅜	11½
76	47½	100	50	50	50	Panhandle P. & R. pfd.		$2,564,400	$100	37½cQ	7- 2-23	99⅜	51	83	54	108	70
47	24¼	2,600	34	32¼	34	Phillips Petroleum	(sh)	2,406,796	N.P.	37½cQ	10- 2-29	57⅜	40	60¼	36¼	53⅞	35¼
3⅜	1	700	1	1	1	Pierce Oil Corp.		$29,622,831	$25	.....	.....	..	..	1⅛	½	5¼	½
5⅞	½	400	2⅜	2⅜	2⅜	Pierce Petroleum	(sh)	2,500,000	N.P.	.....	.....	7	2¼	5½	2½	7	3½
65⅝	40½	800	52¾	51⅜	51⅜	Prairie Oil & Gas		$61,720,125	$25	50cQ*	9-30-29	60¼	48	55½	45⅝	68	46
65	45	300	57	57	57	Prairie Pipe Line		$101,250,000	$25	75cQ†	9-30-29	137½	122½	190	130¾	280	172
25⅞	4	400	8	8	8	Producers & Refiners		$37,438,950	$50	.....	9-15-23	20⅜	11	33⅞	16¾	29⅞	16
46¾	30	No sales.				Producers & Refiners pfd.		$2,845,350	$50	37½Q	5- 1-25	41¾	30¾	50	36⅞	49⅝	41
30¾	20	4,900	22⅞	22⅛	22½	Pure Oil		$75,959,250	$25	37½Q	9- 2-29	31	25¼	33½	25	31⅝	19
49⅝	20	3,300	23⅞	23⅜	23⅞	Richfield Oil		$47,964,650	$25	50cQ	8-15-29	27½	22	28⅝	25⅜	56	23
42½	15	1,700	19	18⅝	18¾	Rio Grande Oil	(sh)	1,200,000	N.P.	$2.00A	7-25-29	..	..	..	..	37½	32
64	43½	300	51⅞	51⅜	51⅜	Royal Dutch, N. Y.	(sh)	611,303	$13.40	.....	8-13-29	57⅜	47⅜	54½	44¼	64	44⅝
55	43⅜	No sales.				Shell Transport & Trad.		£19,654,274	£1	$1.45	7-23-29	48⅝	40½	47⅞	41⅜	57½	40⅝
31¾	19	1,500	23	22½	23	Shell Union Oil	(sh)	13,000,000	N.P.	35cQ	9-30-29	31	24	31¾	24⅝	39¼	23¼
40⅛	15	300	22½	22⅛	22½	Simms Petroleum		$8,060,380	$10	40cQ	9-14-29	25⅝	15⅛	25⅜	14¼	27¼	18⅛
45	21	9,200	23⅞	23⅛	23½	Sinclair Consolidated	(sh)	5,500,000	N.P.	50cQ*	10-15-29	24⅞	15¾	22⅜	15	46¾	17⅜
111	103	200	109½	109½	109½	Sinclair Consolidated pfd.		$16,025,250	$100	$2Q	8-15-29	99½	90	104½	97	110	102½
46½	28	700	30½	30⅛	30½	Skelly Oil		$27,237,750	$25	50cQ	9-16-29	37⅛	26⅝	37⅜	24⅛	42⅝	25
81⅞	51½	5,300	60⅞	60	60⅛	Standard Oil of Cal.	(sh)	12,594,098	N.P.	62½cQ	9-16-29	63⅝	51½	60¾	50⅜	80	53
83	48	15,700	62¾	61¾	62½	Standard Oil of N. J.		$620,079,800	$25	25cQ*	9-16-29	46⅜	37½	41⅜	35⅛	59⅜	37¾
48⅛	31¾	23,100	32⅝	31¾	32	Standard Oil of N. Y.		$434,094,575	$25	40cQ	9-16-29	47¼	30⅜	34⅛	29¾	44¼	28¾
86⅜	55	400	56⅛	56⅛	56⅛	Sun Oil	(sh)	1,297,627	N.P.	25cQ	9-16-29	41¾	30⅛	34⅞	30	77	31½
24	5¼	2,400	6½	6⅛	6¼	Superior Oil Corp.	(sh)	2,324,938	N.P.	.....	12-20-20	..	..	..	..	..	..
71⅞	50	3,500	55	54⅛	54⅝	The Texas Corporation		$211,076,650	$25	75cQ	10- 1-29	58	48	58	45	74¾	50
23⅞	9½	300	10½	10½	10½	Texas Pacific Coal & Oil Co.		$8,380,340	$10	5A‡	1- 3-28	19½	12	18⅞	12	26⅝	12⅛
40	14	300	22¼	22¼	22¼	Tide Water Oil	(sh)	2,191,759	N.P.	20cQ	9-30-29	39¼	27	29⅛	19	41½	19⅝
97½	85⅛	200	88	88	88	Tide Water Oil 5½% pfd.		$20,705,200	$100	$1.25Q	8-15-29	103	87¼	90⅛	85	100⅛	86
23½	10	3,700	12¼	11¾	11¾	Tide Water Associated	(sh)	4,796,158	N.P.	.....	8- 1-27	27	20⅞	19⅛	15¾	25	14¾
90⅞	74⅛	300	81	81	81	Tide Water Associated pfd.		$72,844,300	...	$1.50Q	10- 1-29	..	..	..	..	..	..
15¼	5⅛	7,700	8⅜	8	8¼	Transcontinental Oil	(sh)	3,742,029	N.P.	.....	.....	5½	3	10⅜	3¾	14¾	7¼
57	42¼	900	44½	43⅝	43⅝	Union Oil of California		$94,798,100	$25	50cQ	8-10-29	58⅜	37¼	56½	39⅝	58	42⅜
163¾	121⅞	No sales.				Union Tank Car		$31,061,200	$100	$1.25Q	9- 3-29	120⅜	84¼	127½	94	128⅛	110
42⅞	15	2,100	21	19⅞	20½	Warner-Quinlan	(sh)	356,000	N.P.	50cQ	10- 1-29	30⅛	23½	34½	24½	44⅞	26
38	25	500	27¼	26½	26½	White Eagle Oil & Refining	(sh)	490,000	N.P.	50cQ	10-21-29	29¾	25⅛	27½	20	38	20⅛
29¾	12⅞	200	14½	14½	14½	Wilcox Oil & Gas	(sh)	2,400,000	N.P.	.....	5-10-28	..	..	..	..	..	.

*Plus extra dividend of 25 cents. †Plus extra dividend of 50 cents. ‡Payable in stock. x Ex-dividend.

Transport Co. by Standard Oil Co. of Indiana, which, on latest information, holds 70 per cent of Pan American's outstanding stock. This was accomplished through the exchange of seven shares of Indiana company stock for six of Pan American. This transaction assures the Indiana company of large crude oil reserves in Venezuela, a new refinery of 105,000 bbls. daily capacity on the nearby island of Aruba, and a marketing outlet at points on the Atlantic Seaboard.

New York-Vacuum

The mooted Vacuum Oil Co.-Standard Oil Co. of New York amalgamation is reported near crystallization. Although no official statement as to the merger terms has been forthcoming, the general belief is that it will be concluded on the basis of three shares of Standard of New York for one share of Vacuum.

The New York company has recently made an offer to acquire White Eagle Oil & Refining Co. on the basis of 8½ shares for 10 shares of White Eagle. With approval of the merger virtually assured, the Standard Oil Co. of New York will be placed in an important position in the marketing of oil products throughout the Middle West, supplementing its distribution in New York, the New England States, southern states and on the Pacific Coast. It also holds an outstanding position in oil export trade with the East.

Ohio Oil Co., toward the close of the year, made a proposal to acquire Illinois Pipe Line Co. through an exchange of three shares of a new 6 per cent preferred stock for each share of the latter company's stock. Thus the Ohio company proposes to take back to itself the pipe line properties which it segregated from its operations in 1915 and gave to Illinois Pipe Line Co., which it formed.

A possible merger which may develop in the coming year is that of Sinclair Consolidated Oil Corp. and Prairie Oil & Gas Co. Although no actual negotiations on terms have taken place, it has been admitted that preliminary discussions of a general nature have been in progress and a survey made of the properties of each company for valuation purposes.

Tax Refunds

One of the largest of the 1929 corporate tax refunds reported to Congress by the Treasury Department is that received by the Standard Oil Co. of Kentucky. It amounts to $2,614,552 and represents something more than $1 a share on the outstanding 2,565,460 shares.

The refund is equal to more than 50 per cent of the cash dividends which Kentucky paid out in 1929. The company's treasury cash position, previously quite strong, should thus be still further improved. Kentucky's 1929 cash dividends were the largest it has ever disbursed in one year, amounting to just over $5,000,000. They were $2 a share on present stock issue and equal to $7.50 a share on the stock outstanding prior to stock dividend and reduction of par

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INDEPENDENT OILS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members of New York Curb Market, Kennedy Building, Tulsa, Okla.

1929 High	1929 Low	Week ended December 24 Sales	High	Low	Close	Stocks—		Outstanding capital	Par value	Div. rate	Last paid	1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low
72	⅛	1,000	1/16	1/16	1/16	Amer. Con. Oilfields		$11,018,000	$5	.....	.....	$6.75	.45	2 1/16	.55	1½	.53
8⅝	8⅛	500	1½	1½	1½	Amer. Maracaibo	(sh)	700,000	N.P.	.....	.....	..	..	7½	2¾	9½	3⅛
5	1½	No sales.				Argo Oil	(sh)	683,971	$10	.....	.....	..	..	2¾	1	4½	2¼
62	7⅞	No sales.				British-American	(sh)	1,311,321	N.P.	25cQ	10- 1-29	85¼	60	40	20½	55	32⅜
4⅞	1	400	1⅜	1	1	Carib. Syndicate		$131,250	25c	.....	.....	28⅜	9¼	28¼	15½	4½	3⅞
68½	20	31,800	26¼	24⅝	25⅞	Cities Service	(sh)	24,290,359	N.P.	30cQ*	11- 1-29	..	..	58¾	40¼	90⅞	54
98¾	84	500	88⅞	88¾	88¾	Cities Service pfd.	(sh)	1,500,000	N.P.	50cM	11- 1-29	..	..	95⅜	87	103½	94½
2	¼	2,600	⅜	¼	⅜	Colombia Syndicate		$2,000,000	$1	.....	.....	3½	1⅜	3⅞	1⅛	3¼	.76
11⅛	2½	No sales.				Cons. Royalty		$5,000,000	$10	15cQ	.....	..	..	9¾	6⅜	8⅞	6¼
11¾	5⅝	3,800	6½	6⅛	6⅛	Creole Petroleum	(sh)	5,977,873	N.P.	.....	.....	16	10	14⅞	9½	17½	9½
2½	¼	400	¼	¼	¼	Crown Central	(sh)	578,000	N.P.	.....	.....	..	..	3	.50	3¼	.76
26	6½	500	8⅝	8⅝	8⅝	Darby Petroleum	(sh)	1,019,392	N.P.	25cQ	10-15-29	7⅞	6¾	12	4	33½	3¼
11	2	No sales.				Derby Oil & Refining	(sh)	500,000	N.P.	.....	.....	..	..	2½	74	2¼	1
44	20¾	No sales.				Derby Oil & Refining pfd.	(sh)	48,500	N.P.	.....	.....	..	..	16¾	4	21⅛	7½
209	115	1,200	135	133½	135	Gulf Oil Corp.	(sh)	4,504,921	$25	37½cQ	10- 1-29	98	92	118	86¼	165	101⅛
2⅞	⅜	300	⅞	¾	¾	Intercontinental Pet.		$5,682,000	$5	.....	.....	$3.00	.83	2½	.80	3⅜	1
3⅜	1¼	No sales.				Kirby Petroleum	(sh)	750,000	N.P.	.....	.....	..	..	2¼	1⅛	3	1¼
6⅛	1	1,400	1½	1¼	1½	Leonard Oil & Dev.		$50,000,000	$25	.....	.....	12¼	5¾	10⅞	5⅛	9⅜	5⅛
38⅞	18	200	19⅝	19½	19⅝	Lion Oil & Refining	(sh)	250,000	N.P.	50cQ	10-27-29	27	20	27½	20	43⅞	20
67⅞	28	No sales.				Lone Star Gas	(sh)	5,000,000	N.P.	20cQ	9-30-29	46	30	59⅜	37	62¼	48½
1¼	¼	No sales.				Magdalena Syndicate	(sh)	850,000	$1	.....	.....	2⅞	1	2⅞	.80	1⅞	.50
38½	14	700	15½	15½	15½	Margay Oil	(sh)	160,000	N.P.	50cQ	10-10-29	34	12½	52	12	48½	32
6⅜	2½	No sales.				Mexico-Ohio Oil		.....	...	.....	.....	8	5½	12⅛	5	8	2¾
1½	¼	No sales.				Mountain & Gulf		$4,000,000	$1	2cQ	10-15-29	1¾	1⅛	1½	1	1⅜	.76
22⅞	7	2,300	8⅜	8¼	8¼	Mountain Producers		$1,682,182	$10	40cQ	10- 1-29	26	23	29¼	22¾	28⅞	19½
5	2¼	No sales.				New Bradford Oil		$1,095,291	$5	12½cQ	10-15-20	6⅝	5	5⅞	4⅝	5⅝	4¼
9⅝	2¼	200	3⅞	3⅝	3¾	New Mex. & Arizona		$1,000,000	$1	.....	.....	..	..	16	9¼	11⅞	7⅛
18½	6⅛	No sales.				North Central Texas	(sh)	400,000	N.P.	15cQ	9- 3-29	..	..	12¾	9½	14¼	8½
3½	½	1,600	1/16	⅞	⅞	Pandem	(sh)	489,875	N.P.	.....	.....	10⅛	5⅞	9⅜	3¼	6	2⅛
10¼	2⅝	2,200	2¾	2⅜	2½	Pantapec Oil	(sh)	1,506,600	N.P.	.....	.....	12¼	11⅜	12¼	7	15⅜	8½
7¾	4⅜	No sales.				Pennok Oil	(sh)	150,000	N.P.	.....	.....	22¾	12	13½	5⅛	7¾	4⅞
16	9⅝	No sales.				Red Bank Oil	(sh)	250,000	N.P.	.....	.....	17	8½	24⅜	7	18	4⅞
8½	1⅛	500	2⅜	2⅜	2⅜	Reiter-Foster	(sh)	388,584	N.P.	10cQ	9- 1-29	30¼	12	15½	3½	12⅞	4⅛
11	3	500	3¾	3¾	3¾	Ryan Consolidated	(sh)	500,000	N.P.	.....	.....	7	4½	7	4½	12	4⅛
5⅞	1⅞	No sales.				Salt Creek Consolidated	(sh)	1,286,300	$10	10cQ	10- 1-29	10	7⅛	8	5¼	7¼	5½
25⅞	9	2,400	10¼	10	10	Salt Creek Producers	(sh)	1,496,859	$10	50cQ	11- 1-29	35	24⅛	35½	27¼	35	23⅛
2½	1/16	No sales.				Savoy Oil		$750,000	$5	.....	.....	6⅞	1¼	7	1¼	3½	1
145	82	No sales.				Transcontinental pfd.	(sh)	157,500	$100	.....	.....	92	63½	92	63½	93¼	75
6½	1¾	1,500	2½	2¼	2½	Venezuelan Petroleum	(sh)	755,090	$5	5cQ	8-15-29	8	4½	7⅜	4¼	9⅛	4¾
9½	2	No sales.				Woodley Petroleum		$500,000	$1	.....	.....	8⅛	5½	7	4¾	8¼	4⅞
2⅞	½	No sales.				"Y" Oil & Gas (new)	(sh)	100,000	N.P.	.....	.....	6½	6	6	1¾	8⅜	2⅛

*Including extra in stock.

STANDARD OIL STOCKS ON NEW YORK CURB

Quotations Compiled by Francis, Bro. & Co., Members of New York Curb Market, Kennedy Building, Tulsa, Okla.

1929 High	1929 Low	Week ended December 24 Sales	High	Low	Close	Stocks—	Outstanding capital	Par value	Div. rate	Last paid	1926 High	1926 Low	1927 High	1927 Low	1928 High	1928 Low
18	14	3,700	17	16¾	17	Anglo-American Oil	£4,192,635	£1	.....	6- 5-29	21	16	21⅝	17⅞	22⅜	14⅞
46½	25	No sales.				Borne Scrymser	$1,000,000	$25	$18.A.	10-15-29	76	65	69	50	56½	44½
74½	55	No sales.				Buckeye Pipe Line	$10,000,000	$50	$1Q	9-14-29	59½	42	60	45	76	53
210	130	No sales.				Chesebrough Mfg.	$3,000,000	$25	$1Q*	9-30-29	82½	65	126	76½	161	117
29	8⅞	900	13⅛	13	13⅛	Continental Oil	$36,057,840	$10	.....	12-15-27	25⅞	17½	22⅝	16¼	23	16
75¾	40	No sales.				Cumberland Pipe Line	$1,500,000	$50	$1Q	9-15-29	137	102	137	89	114	67
70½	42	No sales.				Eureka Pipe Line	$5,000,000	$100	$1Q	11- 1-29	63¾	43	68½	47	88	64⅛
65⅜	5	No sales.				Galena Signal Oil	$16,000,000	$100	.....	.....	32½	9⅞	13½	3½	13	4¼
128	74⅛	700	82½	82½	82½	Humble Oil & Refining	$74,103,300	$25	30cQ†	10- 1-29	68¼	52	68½	54	114¾	59¼
340½	260	400	309¾	309¾	309¾	Illinois Pipe Line	$20,000,000	$100	$10S.A.	6-15-29	144½	125½	182	123¾	290½	176½
41	22	600	25⅞	25¼	25⅞	Imperial Oil Co., Ltd.	26,421,768	N.P.	12½cQ	9- 3-29	..	..	64¾	37¾	104	56¾
41⅞	26	500	40	40	40	Indiana Pipe Line	$3,000,000	$10	50cQ‡	11-15-29	72½	58	94½	61	91⅞	74⅜
30⅜	15	500	21	20¾	21	International Pet.	14,247,088	N.P.	12½cQ	6-25-29	35½	28¾	29	28¼	55	35
25¼	10½	100	21⅞	21⅞	21⅞	National Transit	$6,362,500	$12.50	25cQ	9-26-29	20¾	12½	24	13½	32⅜	19⅜
16¼	10	100	15	14⅞	14⅞	New York Transit	$1,000,000	$10	40cQ	10-15-29	51½	27¼	44½	31¼	75	38½
63	41	No sales.				Northern Pipe Line	$2,000,000	$50	$2S.A.	7- 1-29	80½	64	100	70	69	56½
79⅞	64⅛	300	70⅝	70	70⅝	Ohio Oil	$60,000,000	$25	50cQ‡	9-16-29	67¾	55¾	67⅞	52	84	58½
44½	20	200	20⅜	20	20⅜	Penn Mex. Fuel	$10,000,000	$25	50cQ	12-15-28	24¾	15	39	12	84	28
50	29	300	34⅞	34⅞	34⅞	Solar Refining	$4,000,000	$25	$1.25S.A.	6-20-29	..	..	..	..	..	..
22½	13	No sales.				Southern Pipe Line	$1,000,000	$10	50cQ	.....	74½	61½	27¼	15½	19	15
60¼	35⅛	No sales.				South Penn Oil (new)	$30,000,000	$25	50cQ	9-30-29	50	34½	41½	35	71⅞	36¾
70	60	No sales.				Southwest Pa. Pipe Lines	$1,750,000	$50	$1Q	10- 1-29	56	47½	83	55½	102	70
63	45	2,500	53⅜	52⅝	53¼	Standard Oil of Indiana	$348,175,069	$25	62½cQ	9-16-29	70½	60½	81½	64⅝	95⅞	70⅞
33¾	18	200	27	27	27	Standard Oil of Kansas	$8,000,000	$25	.....	6-16-24	36½	16½	20⅞	14⅝	37¾	15
46⅞	29	1,600	33	32¼	32¼	Standard Oil of Kentucky	$25,654,516	$10	40cQ	9-30-29	134⅜	108	130	111½	179¾	122¼
50¼	40	No sales.				Standard Oil of Nebraska	$4,649,225	$25	62½cQ‡	9-30-29	51⅛	42	49½	40	54⅞	39⅞
129	60	No sales.				Standard Oil of Ohio	$14,000,000	$25	62½cQ	10- 1-29	372	288	87½	72	134	71
18	10	No sales.				Swan-Finch Co.	$861,466	$25	.....	1-15-29	21	15	21	14½	23½	16
133¾	75	500	96	94⅝	94⅝	Vacuum Oil Co.	$126,180,350	$25	$1Q	9-30-29	109⅜	90¼	..	..	111	72

*Plus 50 cents extra. †Plus 20 cents extra. ‡Plus 25 cents extra. x Ex-dividend.

Brief Items for Petroleum Refiners

White Oak Company To Build Plant at Westwego Terminal

The White Oak Refining Co., whose operations will be enlarged in 1930, will build a second refinery at Westwego, La., according to an announcement by Victor H. Smith, president of the company. The new plant will have a capacity of 3,000 bbls. daily. Construction work is to start as soon as contracts can be let.

The new plant will be operated in connection with the terminal facilities of the Gulf States Terminal & Transport Co., an affiliated company which is engaged in the coastwise and export movement of petroleum products. Contracts have already been closed for the movement of considerable gasoline to East Coast and foreign buyers. The new plant although it will be built to refine crude oil will be used for rerunning products obtained from Mid-Continent and other refiners so that finished products can be obtained to meet the specifications of buyers. The terminal also has facilities for stabilizing and blending natural gasolines for export movement.

The White Oak company has closed contracts covering the crude oil requirements of the company's refinery located at Allen, Okla. The company has purchased 500,000 bbls. of crude oil from the Gypsy Oil Co. and the same amount from the Mid-Continent Petroleum Corp. A total of 250,000 bbls. daily has also been purchased from the Amerada Petroleum Corp. This crude oil, which comes from the Greater Seminole area, will be used to maintain an average crude runs to stills of 6,000 bbls. daily at the refinery.

A large part of the refinery gasoline output over the next 90 days has been

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WILL START OPERATING OKLAHOMA CITY PLANTS

OKLAHOMA CITY, Okla., Dec. 28.—Two local refineries which have been shut down for some time and which were recently taken over by new owners and remodeled will start operating early in January according to present plans.

The Caravan Refining Co., which took over the old plant of the Home Oil & Refining Co., has practically completed an improvement program. The plant has a rated capacity of 5,000 bbls. daily and, according to owners, its initial crude runs to stills will be 2,000 bbls. daily. New still equipment has been installed. C. P. Peterson, president of the company, has announced that an operating crew will be organized shortly after the first of the year and the plant will then be operated on a permanent basis. Crude oil will be secured from the Oklahoma City Field.

The Electrol Refining Co. plans to start operating its plant next week. What is known as the McCabe Electrical process has been installed at this plant which also has the regular skimming plant equipment. The company is laying a 4-inch line to the Oklahoma City Field to secure its crude oil supply. The initial runs will be on a basis of 400 bbls. daily.

WISCONSIN OIL MEN'S FROLIC

MILWAUKEE, Wis., Dec. 28.—The Wisconsin Petroleum Association's Winter Frolic will be held at the Hotel Pfister on January 28 and 29. There will be a number of equipment exhibits. A fine entertainment is promised all visitors as well as members.

EXAMINERS RECOMMEND IMPORTANT CHANGES IN SOUTHWESTERN RATES

By C. E. Kern
Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 30.—Rates on refined petroleum products from, to and between points in the Southwest are proposed in a report by Examiners Burton Fuller and Phillips Peyser to the Interstate Commerce Commission. This proposed report is the result of a rate structure investigation by the Interstate Commerce Commission in cooperation with the state commissions of Arkansas, Kansas, Louisiana, Missouri, Oklahoma and Texas.

It is one of the most exhaustive reports of the kind ever prepared for the commission. It reviews the history of the rate structure of the area covered and gives innumerable facts concerning the refining and transportation problems of the Southwest. The report strongly condemns the general rate structure maintained by the railroads in the area under investigation, saying: "The record is convincing of the inequalities in the present adjustment. Within the territory included in this investigation, several distinct rate areas exist without any apparent justification. These rate areas for the most part follow state lines. The rates between the areas are not on any consistent basis and are out of line with the rates within the areas. Discrimination and prejudice abound both as between refining points and as between destinations. Nevertheless, it can be said for the present adjustment that it is in general free from fourth section departures and that the rates within the respective areas and to some extent the rates between the areas have been fixed with some regard to the competitive conditions surrounding the movement of this commodity so as to encourage its movement by rail.

"The existing inequalities cannot properly be cured by a rate structure made on any fixed percentage of the class rates or rates basing thereon. The proposal of the carriers would not only result in unwarranted increases in rates but would entirely ignore competitive conditions on this traffic and create unprecedented fourth section departures and disparities in rates. For example, it would result in rates to many points in the Southwest which would be higher than the rates to the gateways and beyond as far north as the Canadian border and as far east as the Atlantic Seaboard. While the rates to the latter should not be used

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WILL ENLARGE TIDIOUTE AND EMPIRE REFINERIES

OIL CITY, Pa., Dec. 28.—As the result of the merger of the Empire Oil Works of this city and the Wolverine Lubricants Co. of New York City, the Empire refinery located at Reno, near here, will be enlarged. The plant capacity of the Tidioute Refining Co. at Tidioute, Pa., which was owned by the Empire company and which is a part of the merger, will also be increased.

The greater capacity will be needed to take care of the increased demand brought about by the merger. The Wolverine company is a large seller of finished lubricating oils and this business will be enlarged. The Empire company will continue to take care of its regular customers, some of whom have been buying Empire products for many years. The Empire refinery is one of the oldest in the State, the original plant being built 50 years ago. Until 1925 it was owned by A. L. Confer. In that year it was consolidated with the Empire Oil & Grease Co. The plant has always been operated exclusively with Pennsylvania grade crude oil.

A holding company to be known as the Wolverine-Empire Refining Co. has been organized under the laws of Delaware with headquarters in New York. The holding company owns all the stock of the Wolverine company and 90 per cent of the stock of the Empire company. No changes in the management of either the Wolverine or Empire organizations have been made.

RESIGNS FROM I.O.M.A.

CHICAGO, Dec. 30.—Jay Trexler, manager of the Red Hat motor oil department of the Independent Oil Men's Association, has resigned effective January 1. No successor has as yet been appointed but it is expected that action will be taken by the board of trustees at their January meeting. Mr. Trexler is going with the Shell Petroleum Corp. in its industrial oil department at the Chicago offices.

TO CONSIDER ACCOUNTS

NEW YORK, Dec. 28.—A committee to consider and make recommendations regarding commercial account sections of the National Code of Marketing Practices for Refined Petroleum Products has been appointed and will meet January 8 in the offices of the American Petroleum Institute. The session is one day in advance of the recently called meeting of the board of directors, to which the committee will make recommendations.

Henry M. Dawes, of the Pure Oil Co., Chicago, is chairman. Members are: W. C. Teagle, Standard Oil of New Jersey, New York; W. M. Irish, the Atlantic Refining Co., Philadelphia; George R. Nutty, Gulf Oil Corp., Pittsburgh, Pa.; W. T. Halliday, Standard Oil Co. of Ohio, Cleveland; Roy B. Jones, Panhandle Producing & Refining Co., Wichita Falls, Tex.; and W. E. Smith, Standard Oil Co. of Kentucky, Louisville, Ky.

TRADE-MARK INFRINGEMENT

NEW YORK, Dec. 30.—The Federal Trade Commission has issued complaint against William H. Johnson doing business as Ethylene Sales Co. and as Hathaway and Hamilton J. M. Redding doing business as Ethyl Gas Co. and J. H. Hathaway doing business as American Chemical Co., all of Dallas, Tex. Complaints charge respondents sold a product which did not have antiknock properties under such names as "Ethylene Fluid," "Ethyl Gas" and "Nox It," imitating trade-marks and advertising material of Ethyl Gasoline Corp.

SHELL BUYS STATIONS

NEW YORK, Dec. 27.—Shell Eastern Petroleum Products, Inc., has purchased the business of the Mecklenburg Oil Co. of Charlotte, N. C. Lloyd C. Eaton and Carl E. Eaton, former owners of the Mecklenburg company, have been appointed exclusive distributors of Shell products in Mecklenburg County. The Mecklenburg company has serviced about 50 retail stations.

POLLUTION PREVENTION CODES IN PREPARATION

NEW YORK, Dec. 28.—A tentative Code of Recommended Good Practice in the Prevention of Pollution is now in preparation as the outcome of meetings of the American Petroleum Institute's Technical Committee on Prevention of Pollution held in connection with the annual meeting at Chicago.

Copies of the first preliminary draft of Section 5 of the tentative code have been placed in the hands of members of the institute's General Committee on Prevention of Pollution, with requests that comments be filed not later than January 1, 1930. The general committee also has been supplied with a draft of the first of several appendices, the first covering "Some Factors Governing Oil Pollution," comments on which are to be filed by January 15, 1930.

Members of the committee situated along the Atlantic Coast are preparing preliminary drafts of three appendices to the code. These are: No. 2, "Gravity Separators for Refineries"; No. 3, "Treatment of Refinery Emulsions," and No. 4, "Filters for Refinery Separators."

Members working on these drafts are: C. L. Waite, Standard Oil Co. of New Jersey, New York; John S. Hess, Sinclair Refining Co., New York; W. B. Hart, Atlantic Refining Co., Philadelphia, Pa.; W. E. Soden, Sun Oil Co., Philadelphia, and Harry Low, Vacuum Oil Co., New York.

It was agreed that other members so situated as to facilitate regional meetings should undertake preparation of preliminary drafts of other sections of the code. Thus California members may draft the section on garages and service stations, Texas members the section on marine oil terminals and Mid-Continent members the section on prevention of pollution in oil fields. George W. Watts

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ETHYL GASOLINE PUMPS SHOULD BE MORE UNIFORM

WASHINGTON, D. C., Dec. 30.—The pump equipment from which Ethyl Gasoline is sold should be made more uniform and the fact that the gasoline contains lead should be made plainer to motorists according to a recommendation made by the Surgeon General of the Public Health Service. The surgeon general in his annual statement made the following report regarding the use of tetraethyl lead in motor fuel:

"The tetraethyl lead investigation under the direction of Surgeon J. P. Leake has continued to yield negative results, so far as evidence of poisoning from tetraethyl lead gasoline is concerned. It has nevertheless been recommended by the surgeon general, after consultation with the members of the committee who advised him in 1925 and 1926, that the signs on the pumps dispensing motor fuel containing tetraethyl lead be made more uniform and plainer to the motorist as to the fact of lead content, and that reliance as to warning be placed on such signs rather than by requiring the word 'ethyl' in the name of the gasoline, since the real possibility of hazard lies in the fact that the gasoline contains lead. This recommendation was adopted by the distributors."

DISMANTLE REFINERY

HOUSTON, Tex., Dec. 28.—The old refinery of the La Porte Refining Co. at Morgan's Point which has been shut down for some time is being dismantled. The salvaged material is being shipped to several buyers.

A Happy New Year.

This is not only a wish but a promise to those buyers and sellers of natural gasoline who have established relationship with the Mid-Continent's oldest natural gasoline clearing house.

NATURAL GASOLINE, All Grades, Including Specialty Commodities.

CRUDE PETROLEUM, Sweet Gray County Oil at Our Pampa, Texas, Terminus.

REFINED GASOLINES, Export and Domestic Grades From Our Refineries; Grandfield, Oklahoma, and Pampa, Texas (building)

BELL OIL & GAS CO.

General Offices TULSA, OKLA.

PRODUCTION OF LEADING OKLA.-TEXAS COMPANIES

(Continued from Page 33)

Standard Oil list, including the Prairie Oil & Gas Co. (together with the Producers & Refiners Corp.), Magnolia Petroleum Co., Carter Oil Co., Atlantic Oil Producing Co., Dixie Oil Co., Mid-Kansas Oil & Gas Co., Humble Oil & Refining Co. and Vacuum Oil Co. produced a total of 37,488,465 bbls. while the leading eight non-Standard companies, Sinclair Oil & Gas Co., Gypsy Oil Co., Pure Oil Co., Independent Oil & Gas Co., Mid-Continent Petroleum Corp., Barnsdall Oil Co., Indian Territory Illuminating Oil Co. and The Texas Company produced 52,038,076 bbls. The Shell Petroleum Corp. produced 5,140,140 bbls. and ranked eighth in the producing list.

In production in the two states in the nine months' period the Gulf Oil Corp. led with 33,917,631 bbls., produced by the Gulf Production Co. and the Gypsy Oil Co. The Standard Oil Co. of New Jersey through its two companies, the Humble and the Carter, produced 26,786,609 bbls. The Prairie Oil & Gas Co. without its subsidiaries, 17,808,932 bbls. Magnolia Petroleum Co., 19,924,259 bbls. and The Texas Company 16,049,053 bbls.

PRODUCTION OF LEADING TEXAS OIL COMPANIES FIRST NINE MONTHS, 1929

(Companies with average daily production of 1,000 bbls. per day or over)

Company—	First 3 months (bbls.)	Second 3 months (bbls.)	Third 3 months (bbls.)	Total 9 months (bbls.)
Gulf Production Co.	7,173,134*	7,594,007	8,082,211	22,849,352
Humble Oil & Refining Co.	4,496,154	6,323,671	7,775,323	18,595,148
The Texas Company	3,606,195	4,047,496	4,906,262	12,559,953
Southern Crude Oil Co.	3,984,993	3,811,091	4,124,464	11,920,548
Shell Petroleum Corp.	3,555,870	3,345,652	2,998,974	9,900,496
Yount Lee Oil Co.	3,076,093	2,816,027	2,451,953	8,344,073
Magnolia Petroleum Co.	2,726,879	2,568,770	2,490,997	7,786,646
Mid-Kansas Oil & Gas Co.	1,781,851	2,088,399	2,816,515	6,686,765
Transcontinental Oil Co.	1,735,375	2,068,707	2,775,854	6,579,936
Phillips Petroleum Co.	1,408,472	1,709,129	3,037,113	6,154,714
California Co.	1,352,761	1,507,015	1,977,513	4,837,291
Prairie Oil & Gas Co.	1,454,272	1,497,737	1,490,515	4,442,524
Marland Production Co.	1,352,907	1,817,468	.....	3,170,375
Atlantic Oil Producing Co.	1,616,288	1,249,824	922,423	3,788,535
Pure Oil Co.	2,220,558	751,508	572,271	3,544,337
Sun Oil Co.	1,338,140	1,270,139	1,267,598	3,875,877
Big Lake Oil Co.	1,189,013	1,156,287	1,086,768	3,432,068
Skelly Oil Co.	1,256,559	942,435	1,500,523	3,699,517
Continental Oil Co.	552,385	576,473	2,736,431	3,865,289
Lion Oil & Refining Co.	.....	1,108,377	1,272,163	2,380,540
McMan Oil & Gas Co.	550,014	686,654	1,118,570	2,355,238
Simms Oil Co.	827,280	878,814	1,045,097	2,751,191
Moody Corp.	824,744	833,880	809,944	2,468,568
Republic Production Co.	937,707	741,855	758,447	2,438,009
Amerada Petroleum Corp.	597,164	446,898	361,127	1,405,189
J. S. Cosden, Inc.	417,580	359,903	277,558	1,055,041
Empire Gas & Fuel Co.	287,045	402,101	513,362	1,202,508
Fain-McGaha Oil Corp.	529,205	478,951	570,985	1,579,141
Group 1 Oil Corp.	449,762	496,244	498,555	1,444,561
Independent Oil & Gas Co.	430,461	368,241	317,045	1,115,747
Roeser & Pendleton, Inc.	386,348	390,492	354,740	1,131,580
Rio Bravo Oil Co.	422,823	591,460	538,455	1,552,738
Texas Pacific Coal & Oil Co.	306,990	357,840	354,807	1,019,637
Waggoner Refining Co.	485,128	392,235	400,050	1,277,413
American Maracaibo Oil Co.	299,902	355,367	269,424	924,693
Cranfill & Reynolds	394,572	304,153	278,079	976,804
Navarro Oil Co.	194,422	349,400	269,409	813,231
J. S. Abercrombie Co.	125,252	152,791	87,600	365,643
Cockrell-McIlroy Oil Co.	74,573	154,098	118,282	346,953
Cranfill Brothers Oil Co.	179,149	133,820	90,817	403,786
Champlin Refining Co.	39,240	51,056	117,849	208,145
Danciger Oil & Refining Co.	88,811	171,867	345,048	605,726
Eastland Oil Co.	122,592	116,911	176,547	416,050
Grayburg Oil Co.	207,758	243,300	185,995	637,053
Houston Oil Co.	78,207	126,836	157,875	362,918
Humphreys Corp.	197,081	206,605	229,555	633,241
Howard County Oil Corp.	.....	123,119	112,093	235,212
Kewanee Oil & Gas Co.	.....	256,376	434,648	691,024
Louisiana Oil Refining Co.	120,565	101,759	60,047	282,371
Murchison Oil Co.	274,288	217,530	133,722	625,540
Petroleum Producers Co.	102,390	93,423	142,535	338,348
Mills-Bennett Production Co.	.....	131,234	278,723	409,957
Panhandle Refining Co.	111,087	144,268	150,831	406,186
Plymouth Oil Corp.	44,151	109,643	195,856	349,650
Rycade Oil Corp.	205,944	190,799	149,115	545,858
Merrick & Bristow	180,651	249,858	177,743	608,252
Moutray Oil Co.	97,307	112,013	110,749	320,069
Midwest Exploration Co.	106,651	130,254	419,084	655,989
Operators Oil Co.	65,449	293,378	331,861	690,688
Owen-Sloan Oil Co.	140,729	185,745	292,671	619,145
E. L. Smith Oil Co.	191,463	152,171	145,104	488,738
Snowden & McSweeney Co.	120,039	85,550	67,807	273,396
Sinclair O. & G. Co., Tulsa	154,212	259,171	102,723	516,106
South Texas Petroleum Co.	207,884	286,809	.....	494,693
Staley-Wynne & Co.	157,299	.....	208,102	365,401
Schermerhorn Oil Co.	240,842	208,758	200,393	649,993
Saxet Oil Co.	43,151	176,802	139,907	359,860
T. G. Shaw	94,904	178,231	113,267	386,402
Texon Oil & Land Co.	173,396	190,890	190,184	554,470
Ward Oil Corp.	50,707	122,860	128,299	301,866
Warner-Quinlan Co.	250,958	203,389	251,390	705,737
Tidal Oil Co.	230,615	215,210	216,362	662,187
Total prod. 72 companies	58,696,391	62,461,224	69,284,309	190,441,926
Total prod. 1,220* others	9,890,634	10,219,003	11,163,271	31,272,908
Total all companies	68,587,026	72,680,227	80,447,580	221,814,834

*Estimated.

PRODUCTION OF LEADING OKLAHOMA OIL COMPANIES FIRST NINE MONTHS, 1929

(Companies with average daily production of 1,000 bbls. per day or over)

Company—	First 3 months (bbls.)	Second 3 months (bbls.)	Third 3 months (bbls.)	Total 9 months (bbls.)
Prairie Oil & Gas Co.	3,988,915	4,558,309	4,819,184	13,366,408
Magnolia Petroleum Co.	3,873,040	3,896,259	4,368,314	12,137,613
Sinclair Oil & Gas Co.	3,115,580	3,958,297	4,311,176	11,385,053
Gypsy Oil Co.	3,555,497	3,576,529	3,936,253	11,068,279
Carter Oil Co.	2,718,560	2,659,236	2,813,665	8,191,461
Pure Oil Co.	2,751,582	2,380,947	1,844,462	6,976,991
Independent Oil & Gas Co.	2,258,844	1,722,477	1,443,860	5,425,181
Shell Petroleum Corp.	1,563,973	1,641,038	1,935,129	5,140,140
Mid-Continent Pet. Corp.	1,275,960	1,646,372	2,115,468	5,037,800
Barnsdall Oil Co.	1,287,276	1,116,078	1,965,361	4,368,715
Indian Territory Ill. Oil Co.	1,880,431	1,057,813	1,348,713	4,286,957
The Texas Company	1,320,324	1,135,180	1,033,596	3,489,100
Amerada Petroleum Corp.	870,993	815,789	814,140	2,500,922
Skelly Oil Co.	944,758	767,300	785,498	2,497,556
Atlantic Oil Producing Co.	385,695	363,496	321,393	1,070,584
Comar Oil Co.	627,254	636,852	645,145	1,909,251
Darby Petroleum Co.	141,020	459,956	569,839	1,170,815
Empire Oil & Refining Co.	318,835	618,193	737,887	1,674,915
Phillips Petroleum Co.	647,155	606,577	621,630	1,875,362
T. B. Slick	1,475,846	112,697	391,526	1,980,069
Shaffer Oil & Refining Co.	380,365	296,828	349,685	1,026,878
Tidal Oil Co.	632,415	620,750	609,408	1,862,573
Twin State Oil Co.	576,093	796,669	620,199	1,992,961
Continental Oil Co.	101,469	124,315	622,829	848,613
Burke-Greis Oil Co.	74,417	.....	148,219	222,636
Coline Oil Co.	47,799	57,717	294,138	399,654
J. S. Cosden, Inc.	27,460	60,089	460,605	548,104
Champlin Refining Co.	229,743	214,498	237,204	681,445
Wirt Franklin Pet. Corp.	182,387	176,750	248,427	607,564
Foster Petroleum Corp.	229,485	207,615	292,667	729,767
Dixie Oil Co.	76,562	75,661	153,612	305,835
Devonian Oil Co.	46,640	63,136	269,669	379,445
Homaokla Oil Co.	199,334	199,903	168,990	568,227
Humble Oil & Refining Co.	229,828	225,134	78,831	533,793
Josey Oil Co.	160,058	155,532	97,499	413,089
Kewanee Oil & Gas Co.	306,730	245,306	235,394	787,430
Louisiana Oil Refining Co.	91,394	109,279	104,642	305,315
Laurel Oil & Gas Co.	187,609	142,377	86,224	416,210
Margay Oil Co.	152,360	109,888	94,666	356,914
Marland Production Co.	414,173	473,798	.....	887,971
Mid-Kansas Oil & Gas Co.	330,319	283,449	266,978	880,746
Minnehoma Oil Co.	93,306	112,465	265,870	471,641
Papoose Oil Co.	90,244	158,824	139,134	388,202
W. B. Pine	80,960	124,807	135,100	340,867
Producers & Refiners Corp.	278,684	101,639	298,467	678,790
Ramsey & Ramsey	154,625	129,931	108,986	393,542
Selby Oil & Gas Co.	26,680	28,568	110,674	165,922
Simms Oil Co.	10,708	.....	435,984	446,692
Silurian Oil Co.	106,403	113,511	121,472	341,286
Schermerhorn-Ardmore Co.	102,843	96,173	89,469	288,485
Superior Oil Corp.	219,402	179,657	207,848	606,907
Turman Oil Co.	147,825	137,825	158,465	444,115
Vacuum Oil Co.	111,163	111,163	100,909	323,235
Wolverine Pet. Corp.	170,393	169,098	173,290	512,781
Westheimer & Daube	217,368	186,758	165,997	570,123
Wentz Oil Corp.	145,349	144,188	140,178	429,715
Wilcox Oil & Gas Co.	222,219	260,325	291,949	774,493
Total prod. 57 companies	41,856,350	40,422,971	45,205,917	127,485,238
Total prod. 1,350* others	22,021,950	21,718,884	20,997,890	64,738,724
Total all companies	63,878,300	62,141,855	66,203,807	192,223,962

POLLUTION PREVENTION CODES IN PREPARATION

(Continued from Page 134)

of Standard Oil Co. of Indiana, Whiting, Ind., may co-operate with any of the groups or draft one of the remaining sections.

Sections contemplated in the code provide for preventing pollution of waters by oil field wastes; by oil at tank farms; by oil at tank car loading and unloading racks; by refinery wastes; by oil at tanker and barge terminals; by oil from tankers and barges; by oil at bulk marketing, grease and compounding plants, and by oil at retail service stations.

WHITE OAK COMPANY TO BUILD WESTWEGO PLANT

(Continued from Page 134)

sold to export buyers. The gasoline is being moved through the Westwego terminal and shipped in tankers chartered by the Gulf States Co. The gasoline is being sold direct to foreign buyers, according to Mr. Smith, on the price basis established by the Petroleum Export Association.

Frank M. Starling, formerly connected with the foreign sales department of the Standard Oil Co. of New York, has been appointed general manager of the company. Gustav Staub has been appointed general manager of refineries for the company. Mr. Staub has been connected with the refinery operations of several companies coming to the White Oak Co. from the Marland (Continental) Refining Co. where he was an engineer in charge of design of refinery equipment.

Mr. Smith expects to leave in a few days on a trip to European points.

ORDER FOR NEW TANKERS

CHATHAM, Ontario, Dec. 28.—The McColl-Frontenac Oil Co. of Montreal has placed orders for two new tank steamers to be built in England for service on the Buffalo-Chicago-Toronto run. The tankers will have a molded depth of 24½ feet and capacity for 26,000 bbls. of crude.

V. O. C. PRODUCTION

NEW YORK, Dec. 30.—Venezuelan Oil Concessions, Ltd. reports for the week ended December 21 production of 124,529 metric tons of crude oil in Venezuela, an average of 17,790 tons per day.

ROLLING RIG METHOD OF APPLYING PIPE COATINGS ELIMINATES WASTE

Announcements have been sent out to the various companies, contractors, engineers and other persons concerned in the construction of pipe lines that a patent has been granted to the Wailes Dove-Hermiston Corp., New York, covering the use of the "rolling rig" or "turning rig" method of applying protective coatings to pipe lines. This method, designed especially to solve the problem of field coating large trunk lines evenly and without waste of material, has been used extensively on pipe of 16-inch diameter and larger.

The patent granted is a basic one, covering the steps of the process. Prior to the development of the rolling rig method the application of hot bituminous coatings to large diameter pipe was accompanied by waste.

Among the methods developed for applying coatings to pipe only three are practicable for use in the field. For many years the only way employed in applying bituminous coatings in the field a pipe line being laid on the Pacific Coast tired of the tedious brushing, peeled off his shirt, passed one end of it under the pipe to a companion and told a third man. "Pour the enamel on the top of the pipe with the bucket and let's see if we can brush it over the bottom by pulling the shirt back and forth."

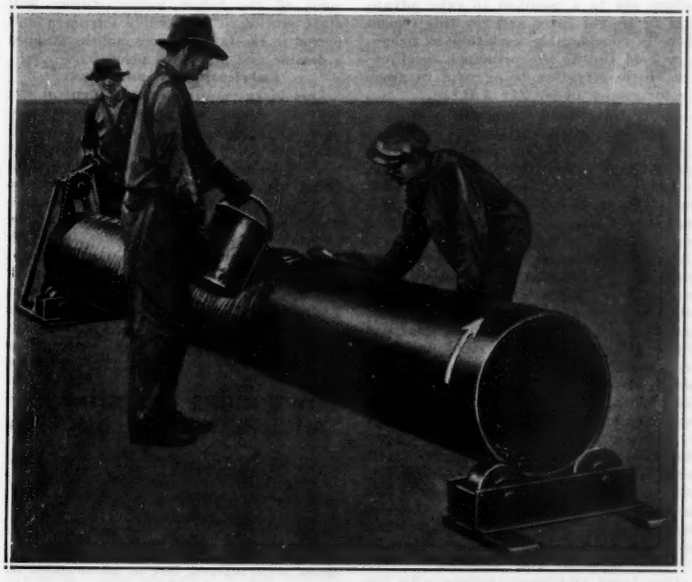
The experiment worked. Later when a foreman, amazed at the speed with which they were working, came around to investigate the inventor apologized.

"I don't know if we are doing it right, boss," he said, "but we sure are putting this stuff on to beat hell."

The canvas sling method proved much superior to the brushing method. Not only was the coating more even and uniform but the application was made rapidly, easily and with comparatively little waste of material.

Sling Method Still Valuable

For the smaller sizes of pipe the canvas sling method is still regarded as the best known way to apply hot bituminous



As the primed pipe is revolved in the direction indicated by the arrow molten enamel is poured from the can and is spread with the canvas pad held by the man opposite.

was brushing them on. Patches often were missed, especially on under surfaces. The coating was likely to be unevenly applied, and material was wasted by dropping from the brush as well as by the application of needless thickness where brush strokes overlapped.

Protective coatings were used in spite of this high expense of application because the expenses caused by soil corrosion were even higher. There was a widespread feeling, however, that the corrosion protection offered by bituminous coatings was costly, and economically justified only where soil corrosion conditions were severe. This feeling is still held in many quarters in spite of the fact that the development of new methods of application and efficiency of application have made a radical reduction in coating costs.

Workman Used His Shirt

A big step in this reduction of the cost was taken with the introduction of the canvas sling or "rag" method of coating. This method originated in the West. The molten enamel is poured along the top of the pipe, which has been cleaned and primed. It flows down over the sides, coating the top half of the pipe. At the same time a canvas sling is manipulated back and forth across the bottom of the pipe, in such a way that it distributes the coating evenly and covers the lower half of the pipe.

Several stories are told of the way the "rag" or canvas sling method originated. According to one version, a brusher on coatings. Some skill is requjred in using the sling, but with a little instruction from experienced men this difficulty is soon overcome.

On pipe of 16-inch diameter and larger, however, it has been found that the canvas sling method is not so satisfactory. On these larger sizes more material is wasted. Experiments were tried by various companies, but no better method of coating the larger size pipe was found until the introduction of the rolling rig method, in which lengths of pipe are revolved while the molten enamel is poured on the top and then spread evenly over the surface with a canvas pad.

Rolling rigs were built and introduced for pipe line work by the Wailes Dove-Hermiston Corp. and the process proved satisfactory when experimentally tried in the field. Fast time was made in applying the coatings and a reduction effected in the quantity of material necessary to coat the pipe. Light turning rigs first used were hand-driven and designed to handle single lengths of pipe.

With flat level country such as prevailed on the Amarillo-Denver line, motor-driven rigs supplemented the ordinary hand-driven rigs to advantage. Hand-turned rigs were used again on the Monroe-Memphis line for 160 miles of pipe through the flood regions paralleling the Mississippi River. Again they proved easy to handle and saved a large amount of material.

Opportunity for Comparison

An opportunity for a direct comparison of the quantities of material required by the canvas sling method and the rolling rig method of application was afforded when the 132-mile extension of Cities Service Gas Co.'s 20-inch natural gas pipe line from Wichita to Ottawa, Kans., was laid last year. On this entire line the coating was applied by the rolling rig method.

Upon completion of the job a checkup showed that 30 to 40 per cent less material had been required per mile than had been used on the first 250-mile section from Pampa to Wichita, Kans., where the canvas sling had been employed. This difference was mainly due to the elimination of waste of material where the rolling rigs were used.

The use of 40 and 60-foot lengths of pipe on the Monroe-St. Louis line, recently completed, necessitated building a heavier type of rig to handle them, although in many cases the light rigs have been used successfully on this line which is protected with enamel for more than 325 miles.

Pipe lengths of 60, 90 and even 120 feet were handled by the rigs on the Arkansas Natural Gas Co.'s new 137-mile 20-inch line running from the outskirts of Monroe, La., to Shreveport. Two and sometimes three pouring gangs worked on a section, and made fast time on this line which was coated throughout.

Mile of Pipe a Day

On both the St. Louis and Arkansas Natural Gas lines, some of the coating gangs coated as high as a mile of pipe per day.

Experience on these and other lines where the rolling rigs have been used has shown that this method of applying bituminous coatings possesses certain advantages including:

A saving in material of 25 to 35 per cent. The labor cost is about the same for both the canvas sling and the rolling rig methods. This saving in the amount of material used therefore means a big reduction in the cost of the job.

All parts of the pipe surface are both poured and brushed, thereby insuring a uniform coat.

An advantage which has especial effect in winter weather is that the enamel has only a few inches of travel between the point of pouring and the point of final application so that it retains practically all of its heat, insuring a good bond between itself and the priming coat.

Inexperienced men can master the method with only a few minutes of instruction.

Pinholes are eliminated by the combined pouring and brushing action.

Inspection is made easier and more positive since the inspector usually stays with the rig and has a good look at all surfaces of the pipe as it is revolved for him.

OIL INDUSTRY ENTERING VERY PROMISING YEAR

(Continued from Page 133)

early this year. In 1928 cash dividends equaled $4.50 a share on old capital. Kentucky operates almost entirely as a marketer in the southern states, and its earnings this year have been improved by reason of more stable oil conditions.

Included in the amounts of federal taxes approved by the Commissioner of Internal Revenue for refund during the fiscal year ended June 30, 1929, is $1,789,340 to Ohio Oil Co., $339,498 to Standard Oil Co. of New York, $336,739 to Barnsdall Corp., $33,953 to Middle States Oil Corp., now in receivership, and $18,259 to Creole Petroleum Corp. Refunds of lesser amounts were made to other oil companies.

On the outstanding stock of Ohio Oil Co., amounting to 2,500,000 shares of $25 par value, the tax refund amounts to about 75 cents a share. The refund to Standard Oil Co. of New York is negligible when applied on its capital stock of 17,363,783 shares, and to Barnsdall Corp. is equivalent to 15 cents a share on 2,256,747 shares outstanding.

Standard Oil of New York

Standard Oil Co. of New York will issue 15,790 shares of its $25 par capital stock in acquisition of 13 filling stations and two bulk shipping stations, including equipment, at Worcester, Mass.

Royalite Oil

It is understood that the majority of shareholders of the Royalite Oil Co. of Calgary, Alberta, have taken advantage of the privilege of purchasing new stock at $30 on the basis of one new share for four shares previously held. Imperial Oil, Ltd., took its entire allotment. Shares comprising unallotted fractions and new shares not accepted are being offered to the public for subscription by the tender, and any excess over the $30 will be distributed, pro rata, to the shareholders interested.

British American

British American Oil Co. of Toronto has declared a bonus of 50 cents per share, in addition to the regular quarterly dividend of 25 cents, payable January 2, 1930.

Twenty Representative Stocks

The Oil and Gas Journal's weekly average price of 20 representative petroleum stocks listed on the New York Stock Exchange and New York Curb, based on closing quotations for Saturday, was as follows:

July 5	56.52	Oct. 5	57.00
July 12	55.69	Oct. 12	59.75
July 19	56.83	Oct. 19	58.70
July 26	55.62	Oct. 26	54.59
Aug. 3	55.09	Oct. 31	42.29
Aug. 10	54.15	Nov. 8	48.31
Aug. 17	60.32	Nov. 15	47.61
Aug. 24	60.61	Nov. 22	47.76
Aug. 31	60.90	Nov. 29	48.60
Sept. 7	59.16	Dec. 4	50.60
Sept. 14	60.40	Dec. 11	50.51
Sept. 21	57.93	Dec. 18	49.24
Sept. 28	58.63	Dec. 24	47.36

EXAMINERS RECOMMEND IMPORTANT CHANGES

(Continued from Page 134)

as a measure of the rates within the Southwest, certainly the approval of such fourth section departures or wise disparities in rates was never contemplated by the relief provisions of the act.

"While competitive conditions within and without the territory are admittedly somewhat different, the carriers' case is built on the fundamental fallacy that they can lawfully ignore competitive conditions to destinations south of a line drawn through the gateways while giving full recognition to such conditions to destinations on and north of that line."

Short Haul Movements

There is evidence, the report says, tending to show that the carriers' proposal would encourage short haul movements by truck and the building of small refineries throughout the territory, thus reducing the volume of movement and average haul of refined oil by rail. The carriers operating in the Southwest have hitherto co-operated with the industries in an effort to keep the traffic within the Southwest on their rails. Their proposal in this proceeding therefore represents a startling reversal of policy.

The record leaves, the report states, the distinct impression that the movement in box cars is much more nearly related to class traffic than the movement in tank cars. In view of the relationship of the commodities, it is believed that the rates in box cars should not be greatly in excess of rates in tank cars. In accordance with the understanding reached at the hearings, no findings will be made as to reparation. However, where rates are found to have been unreasonable or inapplicable in the past, complainants should file statements, etc. If any of the parties are not agreeable to this method of procedure, further hearings should be held.

River Crossings

Rates from the Southwest to the lower Mississippi River crossings should in general reflect the level of rates prescribed for considered in the New Orleans group only in connection with the hauls in excess of 250 miles from New Orleans, and points in the New Orleans district should not be on a group basis for hauls less than 100 miles. Exceptions to the proposed reports in the above entitled proceedings and related cases must be filed with the commission and served on the

parties on or before February 10, 1930. Replies to exceptions must be filed and served by March 1, 1930.

These proceedings and related cases are assigned for oral argument before the commission March 5, 1930, at its office in Washington, D. C. Parties desiring to participate in the oral argument should advise the commission at the time exceptions are filed. The complaint resulting in the foregoing investigation was filed March 17, 1928, by the Gulf Refining Co., The Texas Company, and Magnolia Petroleum Co., alleging that the rates on refined petroleum were unreasonable and unduly prejudicial.

New Groupings

The examiners also recommend that a system of groups for rate making purposes be formed. The Oklahoma group would include all Oklahoma and southeastern Kansas. There also would be a south Texas group, composed of Houston, Bay Town, Port Arthur and Beaumont. A San Antonio and Laredo group, and Baton Rouge would not be in the New Orleans group except in shipments coming a distance of over 250 miles.

Substantial increases in the present rates from south Texas to New Orleans and Baton Rouge were recommended. Sweetwater, Colorado, San Angelo and Big Spring would, if the recommendations are followed, be put in Colorado-Big Spring group; the Amarillo group, Amarillo, Borger and Pampa, and the Shreveport group, Shreveport, Superior, Eldorado, Smackover and Camden.

The examiners recommend that the rate from Houston to Memphis should not exceed the rate from Houston to St. Louis, and the rates from other shipping points should be modified to the same extent as the rate from Houston.

In the section of the report dealing with rates on refined products from to and between points in the Southwest, in which the hearing was held in co-operation with the state regulatory commission of Texas, Oklahoma, Louisiana, Arkansas, Kansas and Missouri, many important recommendations were made on rates on gasoline, kerosene, lubricating oils and greases, naphtha, refined oil, axle grease, paraffin wax and other refined petroleum products. If the recommendations are carried out, uniform commodity descriptions would be prescribed for the first time since petroleum shipments became a major business.

Late Fields

(Continued from Page 44)

inch choke from a total depth of 4,892 feet. The same company's No. 6 Williams is making an estimated 1,600 bbls. daily on a half-inch choke at 5,084 feet.

Other completions at the close of the month included three gas wells at Refugio, as follows: Saxet Oil Co.'s No. 3 Holmes Heard, 1,250 pounds, 3,708 feet; Independent Oil & Gas Co.'s No. 1-A J. F. B. Heard, 1,250 pounds, 3,680 feet; and Larco Petroleum Co.'s No. 1 Strauch, 1,500 pounds, 3,700 feet.

OKLAHOMA

The production at the Oklahoma City Pool for December 31 at 7 a. m. was 109,029 bbls. from 22 wells. The gauges by companies and leases follow:

Company, lease—	Bbls.
Coline, No. 1 Olds	3,929
Coline, No. 3 Olds	10,340
Cromwell, No. 1 Trosper	2,934
I. T. I. O., No. 2 A. Bodine	2,302
I. T. I. O., No. 1 S. Bodine	96
I. T. I. O., No. 1 B. Anderson	3,588
I. T. I. O., No. 1 Button	1,404
I. T. I. O., No. 2 Button	13,342
I. T. I. O., No. 1 Thomas Fuzzell	10,650
I. T. I. O., No. 2 Jennings	7,534
I. T. I. O., No. 1 fee	650
I. T. I. O., No. 1 Peterson	1,126
I. T. I. O., No. 1 Verne	242
Mid-Kansas, No. 1 Fortson	747
Mid-Kansas, No. 2 Fortson	5,891
Prairie, No. 3 Hiddleston	6,760
Shell, No. 1 Petty	8,402
Sinclair, No. 3 Stamper	1,605
Sinclair, No. 1 School Land	5,451
Slick, Nos. 1 and 2 Glidden	7,497
Wirt Franklin, No. 2 Lowery	14,859
Total	109,029

The Sinclair Oil & Gas Co.'s No. 1 School Land, NE cor., Section 36-11-3w, Oklahoma County, has been opened for a 48-hour production test. It made 5,431 bbls. the first 24 hours.

The latest well completed in the Oklahoma City Pool is the Indian Territory Illuminating Oil Co.'s No. 2 Jennings, SW cor. NE NE, Section 13-11-3w. It made 7,534 bbls. in eight hours. Production is coming from the Arbuckle lime at 6,010-6,524 feet.

Prairie Oil & Gas Co.'s No. 4 Hiddleston, NW cor. SE, Section 19-11-2w, was bailing mud and expected to be on production some time the last day of the year. The total depth of the test was 6,548 feet.

Indian Territory Illuminating Oil Co.'s No. 2 Wheeler, SE cor. NW SE, Section 13-11-3w, has reached a total depth of 6,500 feet in the Arbuckle lime and a production test is expected to be made in the next few days.

Production in the East Earlsboro Pool was 45,204 bbls. from 90 producing wells. Eighteen other wells have been completed in the pool and are shut in on account of proration. The above production gauge was on December 31, ending at 7 a. m.

East Little River Pool made 16,443 bbls. from 50 producing wells on the gauge of December 31, at 7 a. m.

Sasakwa Pool gauged 8,606 bbls. from 22 wells on December 31 at 7 a. m.

Production of the new Wilcox sand pool in Sections 13 and 14-5-7, west of the old Allen Field, is declining. It gauged 1,686 bbls. from five wells. The six other completed wells were off production. The gauges by companies and leases were as follows:

Company and lease—	Bbls.
Blackwell, No. 1 A. Flint	660
Texas, No. 1 Lewis	390
Barnsdall, No. 1 Lusty	255
I. T. I. O., No. 1 Mathis	225
I. T. I. O., No. 2 Mathis	156
Total	1,686

Louisiana Oil & Refining Co.'s No. 6 Reed, NW cor. NE NE Section 18-5-8, in the old Allen Pool, found oil in the Wilcox sand. It had been drilled to a total depth of 4,156 feet, and plugged back to 4,147 feet, and shot with 50 quarts from 4,107-47 feet, and has 800 feet of oil in the hole.

Prairie Oil & Gas Co. and others' No. 1 Wilbur, NE cor. Section 23-23-17w, Woodward County, was drilled deeper and encountered water. It had a showing of gas in sand at 5,926-31 feet. The test was drilled deeper to a total depth of 5,936 feet, and the gas decreased to about 500,000 feet, and 3 bailers of water an hour.

Wofford Drilling Co. and others' No. 1 McGee, in Section 4-7-4, Pottawatomie County, has been drilled 5 feet deeper and the production of the 24 hours ending at 7 a.m. December 31 was 1,438 bbls. The total depth of the well is now 3,895 feet.

In the new pool south of the old Little River Pool, E. L. Harris and others' No. 2 Harjoche, in Section 8-6-6, made 1,442 bbls., and No. 1 Harjoche in Section 8-6-6, made 291 bbls. Empire Oil & Refining Co.'s No. 1 in Section 9-6-6 made 1,225 bbls. All the above gauges were on December 31 at 7 a.m.

LITTLE TRADING IN OKLAHOMA MARKET

(Continued from Page 32)

refinery and retail prices have always disrupted satisfactory contract arrangements between refiners and jobbers and the present situation is no exception.

Jobbers who buy on contracts and who are competing with other jobbers who buy on the spot market at prices from one-half to 1 cent under the contract price are seeking adjustments and wider margins in any new agreements.

Despite this situation there are many who do not expect any general lowering of the tank wagon and service station prices as long as present posted schedules on crude oil are maintained. It is maintained that the present retail market is in line with the crude oil costs and this is the controlling factor in the operations of the larger companies rather than the relationship between refinery and retail prices.

Any discussion of basic conditions in the refinery gasoline market generally ends with the agreement that the future trend in the final analysis will depend on the ability of producers to keep the crude oil supply in line with the demand. This is being done in the principal producing areas of the Mid-Continent and California through the arbitrary curtailment of production. This development has its uncertainties as to future success and it seems reasonable to conclude that as long as this condition continues there can be no definite trends in the gasoline market.

Fuel Oil and Gas Oil

Fuel oil and gas oil, which at the start of the year were the weakest products of the refinery list, are the strongest as the year closes. A careful check on Monday and Tuesday failed to reveal any weak spots in the Oklahoma market. Several refiners are behind in their December deliveries and will take part of their January output to take care of orders placed early in December.

The last few days of the year there were buyers in the market who were willing to purchase practically all grades of fuel oil for January delivery at prices now in effect. With the market tight, sellers are in a position to take advantage of freight rates and for this reason there is considerable variation in prices. Low cold test is the principal specification, little attention being paid to gravity for grades under 24° A.P.I.

Railroad Contracts

Additional railroad contracts have been closed for 1930. Three or four contracts recently reported as closed are not as favorable as those previously explained in these columns. One large railroad buyer has closed contracts with a base price of 75 cents. This base price is also the minimum price. In advances the seller gets 60 per cent of any advance in the posted price for 36 gravity crude oil with a maximum of 95 cents. This buyer is not particular as to specifications taking the fuel oil residuum from cracking operation of low gravity. Some of the material purchased is also of high cold test. This contract is in line with agreements effective in 1929.

Another buyer is reported to have closed one-year agreements with refiners with a base price of 85 cents. This agreement also takes 60 per cent of any advance or decline in the posted price for 36 gravity crude oil with a minimum of 75 cents and no maximum.

Gasoline and Naphtha

One large Oklahoma refiner who has been quoting 58-60 U. S. Motor gasoline at 7¼ cents reduced his price to 6¾ cents. Other large refiners have reduced to 7 cents. Other spot sales to jobbers were as low as 6 cents with a few sales to brokers under that price. The spot demand was slow regardless of price.

Most of the Oklahoma refiners have not changed their quotations on the higher gravity gasolines, particularly the 390 and 375 endpoint grades. The export orders which in the Mid-Continent will total 25,000,000 gallons for January and February delivery are for these grades. The domestic demand for 400 endpoint gasoline is fair, although prices are lower than they were a week ago.

The naphtha market is unchanged. The demand over the past week was light but so far as known no price concessions are obtainable from the refiners who manufacture the 50-52 450 endpoint grade.

Kerosene and Distillate

The efforts of several Oklahoma refiners to advance their prices on furnace oil distillates last week were not successful. Although the cold weather in the middle western states has increased the demand, the supply is at least adequate and those who advanced prices found competition from other Mid-Continent refinery groups.

The large supply and slow demand for kerosene apparently will continue to check any price advance in distillates. To get rid of their normal kerosene cuts, which have been increased by changing plant operations to secure the low endpoint gasoline for export movement, refiners are increasing their yields of furnace oils. With the recent relative price relationship between furnace oil and kerosene, the production of former is more attractive from the standpoint of operating costs.

With plenty of kerosene available furnace oil buyers have no difficulty obtaining the low flash material. The refiners are prepared to blend whatever low flash kerosene or distillate that is needed to give the desired flash.

The 41-43 water white kerosene in Oklahoma sold as low as 4 cents the first of the week. Export business under 4 cents was reported to have been placed in North Texas. Most of the Oklahoma refiners were asking 4⅛ to 4½ cents for 41-43 water white kerosene. The low cold test distillates were selling from 3⅝ to 4 cents.

Natural Gasoline

Natural gasoline prices were again reduced in price. Grade AA was freely available at 6 cents on Monday and Tuesday and Grades BB and C, the other two active grades, were selling at 5⅜ cents. This product is weak for the same reason that the domestic grades of refinery gasolines are weak. The supply is large and the demand not generally active.

It is believed that after the first of the year if prices continue to decline some of the larger manufacturers will start storing. This policy during a dull period in the late summer months stopped a decline and stabilized prices.

Lubricating Oil and Wax

One large manufacturer of neutral oils reduced prices on several grades last week. The 200 viscosity grade was available from this source from 1 to 1½ cents under the market that has prevailed in Oklahoma for some time. The desire to reduce storage is said to have been responsible for this reduction in price. Oklahoma refiners the first of the week had not met this competition and general quotations on neutrals were unchanged.

Export wax buyers continue to offer 2⅞ to 3 cents f.o.b. Gulf Coast points for 124-126 wax. A little material has been bought on this basis netting the Oklahoma refiner from 2⅝ to 2¾ cents.

LOW PRICES ARE BID AT MICHIGAN LEASE AUCTION

MUSKEGON, Mich., Dec. 31.—An average of 47 cents an acre was bid by purchasers of oil and gas rights on 2,740 acres of state land auctioned at the state capital at Lansing by the Michigan Conservation Commission. More than 3,500 acres were offered, but in many cases no bids were made. The auction was the first ever held in Michigan and included the sale of oil rights on lands in Clare, Midland, Isabella, Mason and Muskegon Counties.

The standard price for state leases includes 50 cents an acre rental and a sliding scale of royalties from one-eighth to one-fourth if oil or gas is found. The first sale attracted about 50 bidders and spectators. Some territory in Muskegon County went begging while tracts in wildcat areas were snapped up.

The highest price paid was $100 for rights on 40 acres in Clare County near the McKay-Mercier gas well. It was bought by J. A. McKay of Detroit.

PURE BUYS INTEREST IN ECONOMY ORGANIZATION

NEW YORK, Dec. 28.—Pure Oil Co. has purchased an interest in the Economy Oil Co., marketers of Charleston, S. C. Stock control and management of the latter company remain unchanged by the entry of Pure Oil, the Economy Oil Co. contracting to handle Pure Oil products. Economy Oil Co. will expand its operations early in 1930, and plans the establishment of a large waterfront bulk storage terminal.

The Economy Oil Co. was formed in Charleston 16 years ago, and during that time has grown steadily, now ranking as one of the leading independent distributors in South Carolina. Harry J. O'Neill is president of Economy Oil, other officers being T. W. Carroll, vice president, and Edward Chisholm, secretary and treasurer.

PRESSURE FACTORS IN OIL PRODUCTION

(Continued from Page 36)

and the residue gas injected in the sands, knowing that a higher pressure and less effectual work would result; or whether the wet gas should be returned with the probability of more ultimate oil.

From the daily operating standpoint it would appear to be much more profitable to remove the gasoline content and introduce dry gas, for the revenue thus derived would go far toward paying compression charges or even exceed the operating costs. Present data does not show evidence of the repressuring process extracting all of the oil from the formation, so the passing of dry gas through the sand may be warranted, because dry gas would eventually strip oil of its gasoline which could not be recovered with wet gas.

Use of Air

"A large per cent of the repressuring plants now in operation are using air instead of natural gas for repressuring the sands. However, the principal reason in most, if not all cases where air is used, is not because of the idea that air is the best medium, but is being used because an adequate supply of gas is not available, or if available it is at a prohibitive price.

"While present cost should not of itself definitely control the method of operation, yet it does, and rightly should be a modifying element in the problem. The balance sheet covering the operation of the property until the last profitable barrel of oil from it has been marketed, should decide whether air or gas is to be used. As such a balance sheet will not be available until the completion of operation, a forecast of probable results has to be relied upon in making our decisions.

"There are several elements to be taken into careful consideration in preparing a forecast of probable results from a repressuring project, among which in so far as it relates to the repressuring medium to be used, are the source of supply and its cost over the period of expected operation; the relative merits of the two mediums as affecting gravity and ultimate recovery of oil; its effect upon the fuel for operation of the lease and the value of the casinghead gas for gasoline recovery purposes; danger of corrosion, of explosive mixtures and many other items of lesser importance.

"A careful survey should be made to determine whether or not an adequate supply of natural gas is economically available. The majority of the repressuring projects that are now in operation are on properties where vacuum has been used and in some cases still is maintained. This vacuum has contributed to the more complete exhaustion of the dissolved gases once contained in the oil. Most of the free gases have long since escaped, and very much more of the dissolved gas has been produced than would have been produced without vacuum.

"Old vacuum fields are comparatively rare that produce any considerable amount of casinghead gas more than enough for the operation of the property and for fuel for the employes after being stripped of its gasoline content. A few properties do have an excess of casinghead gas above reasonable operating requirements. If such excess gas be in any considerable amount the accumulative volume will, in time, go a long way toward meeting repressuring requirements.

Cycling Gas

"Until the structure or sand body is saturated with gas there will, ordinarily, be more gas fed into the sand than is produced with the oil. However, the sand eventually will be filled, after which most of the gas compressed and delivered into the sand will later be returned through the producing wells to be collected and recompressed and started on another journey through the oil sand. This cycling of gas may be continued throughout the period of operation with such daily addition to the supply as would be required to offset the gas absorbed in the oil. Hence the initial daily average cost of gas used in repressuring a property will not remain the same throughout the period of pressure operation.

"If the repressuring project covers a large block of leases and gas is available, but not available in sufficient quantities for the entire block, it is advisable to plan the compressor and pressure line installations so that the available gas may be delivered to a particular group of wells. As the available gas is increased by the gas returning wtih the oil, this group of wells may be increased. Even where air is used, with judicious operations, adequate back pressure on producing wells, and liquid sealing of sand the gas produced will not ordinarily, for many months after start of operation have a high air content, and may be segregated for use in another group of wells or may be mixed with pure gas. Should there be enough pure gas to justify the operation of a separate compressor or compressors, it would appear advisable to keep it uncontaminated. The presence of air always endangers oxidation and if a part of the wells could be saved from the danger it would justify the trouble, provided it did not cause too great an investment to do so.

"For the properties on which there is no gas available for the repressuring work except through purchase, its utilization may be inadvisable. The cost of installing a gas line to the source of supply, plus the purchase price of the gas would be in most cases prohibitive. It is regretable, however, that at least a portion of the excess gas from our gusher fields and their attendant gasoline plants cannot be transported to and made available for use in repressuring some of the depleted fields."

Selection of Property to Be Repressured

"The size and number of producing oil wells on the property is not as serious in limiting the desirability of applying pressure as was formerly figured. However, it is an advantage to own and control a large number of producing wells in one block, for the reason that the larger the number, the cheaper the cost per unit to equip—also it is more simple and efficient when not necessary to consider one's neighbors. In general, it can be said that a property may be considered as an individual repressuring proposition if a few wells are owned where at least one is an inside location, providing this inside location is within a reasonable distance from one or more of the line wells, say for instance within 900 feet as an approximate limit. In the case where no inside locations are operated, it still has value as a prospective pressure property in a co-operative proposition. These wells will be assumed to be producing from the same formation and are to be given consideration for repressuring possibilities. An attempt will be made to list the most important considerations to be made when examining this hypothetical property in view of applying pressure:

"1. During the past, what has been the expelling force which caused the oil to migrate into the wells? Gas or water pressure are the only two forms of natural energy that need be considered. Of these two forms of natural energy, water is the most undesirable. Therefore, if a property is being flushed by water at the present time, it is considered as being undesirable for the application of pressure, unless the rate of the water encroachment is very slow. Therefore, we assume that natural gas under pressure has been the force aiding the recovery of oil.

Expelling Force

"2. The amount of expelling force originally in the reservoir and how efficient this force has been utilized during the past history of the production. Of course, the amount of past energy that has been released means nothing unless it has been made to bring oil into the well. We may be able to make a reasonable approximation of the past efficiency of the recovery if production records are available which show the amount of oil taken from the reservoir and well records showing the approximate thickness of the pay. Then by making an approximation of the oil originally in the reservoir by the volumetric method and by knowing the amount produced we can get an idea of the richness of the remaining pay sand. If these figures show a low yield of, say up to 20 per cent, we know that it is going to be easy to show results by repressuring, unless other conditions are badly against it.

"3. The present expelling force. The present oil-gas ratio should be considered, and if high, a careful study be made to find out if it is not likely that an exposed gas sand is not responsible, otherwise it might indicate a porous gas sand grading into a less porous oil sand which might make it impossible to get worthwhile results with pressure. In the case of the exposed gas sand, care should be taken to be sure that it can be located. If the gas sand is in the oil-bearing horizon, say between oil pays, it might be hard to handle unless better than the average well records were made at the time the wells were drilled. Should the oil-gas ratio be low, it might be due to water encroachment, and should be given study as stated before, for unless the water is moving slowly, the recovery of oil might not be increased either in rate or amount.

Sand Characteristics

"4. Most of our experience has been with the Bartlesville sand, therefore we are inclined to compare other sands to this sand. Knowing that in general this sand has responded to repressuring, it is only logical to do this. Thus, if any sand is comparable to the Bartlesville sand, we need not fear it or in general, any sand having a constant porosity, providing this porosity is within reasonable limits.

"5. Production of oil and water. The past rate of production, both oil and water, should be checked. If the plotted oil production shows a normal decline it will help prove that gas is the major expelling force. If water is produced with the oil, it should be found out if possible, if it is due to casing leaks or bottom water, and if kept off the sand by the pumps. Salt water has been quite a problem to us because of corrosion and cutting troubles; however, we feel that if natural gas were used for restoring the pressure, that our corrosion and emulsion troubles would be very much less. On one of our representative repressured properties water has probably saturated the sand to the extent that it requires very high operating pressures and results have not been good up to the present time on this property.

"6. Resistance of sand to the admission of gas. Probably the only sure way this can be tested, is to have a portable compressor made and try each prospective key well separately. If pressure above 350 pounds per square inch is going to be required, it should be carefully weighed before going to the expense of installing compressors. We have had very limited success on these high-pressure properties, up to the present, part of this is due to the extra strain on the equipment and part due to poor resuls in increasing the recovery. Cut oil and corrosion give a lot of trouble here also.

"7. The available supply of fresh water should be taken into consideration as a good supply of cooling water is very much desired for cooling engines and compressors.

Proximity to Supply of Dry Gas

"8. Unless due to bad co-operative conditions it is believed that it will pay to use gas for repressuring in most cases. There is no available data in our possession to prove this point, but it is reasonable to expect less corrosion and cutting of oil and less danger of explosions. The expense should not be prohibitive if it can be figured that nearly all the gas could be recovered when the property is to be abandoned. We do not know whether air or natural gas or the mixture of the two will give the bets results, which is of paramount importance. We feel that air will give the quickest results, but the ultimate yield is still in doubt. This item does not carry a great amount of weight in the selection of the property and perhaps is more desirable to have an ample supply of natural gas, than an undesirable one, we could afford to install oil-burning engines for driving the compressors and combat corrosion and emulsion rather than give it up as not fitted for repressuring.

"9. Effect of vacuum. If the property is sensitive to vacuum it will probably show quick response to pressure and low pressures will be required. In general, we look upon this as a favorable indication when considering repressuring.

"10. General repair of the properties. If the property is in good repair at the time it is a good feature; however, sometimes a property in poor repair shows that it has been neglected in the past with a corresponding higher saturation than one having the best care during its life.

Selection of Key Wells

"Generally, or first consideration of a location for a key well is its position with relation to other producing wells on the property. Thus, if conditions are very regular and there are no offsets to contend with, it becomes a matter of selecting the well having the most number of relatively near but equidistant producing wells never alike at any well, so then it is probably best to prepare a list of the wells that are not desirable for key wells and make note of them on the map. Wells are put on this black list if they have the following undesirable features:

"1. Broken and shaley sand. It is evident that wells having exposed sand of this nature will probably not take gas at a reasonable pressure.

"2. Wells having an abnormally small amount of sand will be considered bad for the same reason as just previously stated, or because the volume of gas taken will be expected to be too small at reasonable pressures.

"3. If a well has been producing a large amount of water, it is rejected if it is felt that the water has not been kept off the sand, so that the sand might be saturated in the vicinity of the well. If it is known that the well is producing edge water, it is thrown in the black list without question.

"4. A relatively small daily production, unless due to some fault of the condition. This is also taken as an indication of high resistance at this well and is classed as undesirable.

"5. Relatively low initial productions are in this class for the same reason as (4), provided the wells were completed before the rock pressure was badly dissipated.

"6. A well in poor repair, that is, one needing to be cleaned, but cannot be because of collapsed pipe or junk in the hole, or one having a liner that cannot be pulled, is placed in this list. However, that it cannot be tubed low enough to pump it may still make a good key well, because the same has remained clean and would be productive if the fluid level was high enough. A well like this should by all means be taken for a key well.

"7. If no authenic record can be found on a well, it is put in the doubtful class, especially so if it is known that there is likely to be a barren sand exposed so that the pressure might be lost without doing any useful work.

"8. All line wells that are offset are tabooed unless co-operation with the offset owner has been obtained. In the case an agreement has been made with the offset owner, sometimes this agreement fixes the wells to be made into pressure wells and the one to be maintained as producers.

"9. Structural conditions at the well may have some bearing as to the direction of the spread of the pressure, but we are not prepared to give data along this line, as none of our properties have structural control. There seems to be evidence at some places that the spread is up structure, probably due to less resistance in this direction. If this is true, then the wells high on structure are not desirable for key wells. These general classes of undesirable features will help limit the wells to be considered to a lesser number so that it will be easier to make the selections. Now we can select the key wells from the wells considered as having the best chances of giving results and made them so distributed over the property that each well will have approximately the same area surrounding it. The real test, of course, is to try to

[5]H. G. Ellis, Wiser Oil Co. The Oil and Gas Journal, 10-20-27.

[6]F. B. Hall, Tidal Oil Co., Oil Weekly, December 30, 1927.

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force air into the well so selected. If a portable compressor is used, actual data can be obtained as to the action of the well under pressure."

The tendency is to use "open sand" wells for taking the gas and "tight sand" wells for producers, because the former permit too great a gas waste when produced and the latter require too much pressure in taking the gas and cause large frictional losses.

Proportion of Pressure Wells

The proportion of pressure wells to producing wells depends not only on the local conditions, but also on the principle adopted for operation. If back pressure is used on the producing wells different factors enter the problem. Experience indicates that without the use of back pressure that it is best to distribute many pressure wells as uniformly as possible among the producers. Regulated back pressures permit fewer pressure wells and a better choice of location in respect to the surrounding producers.

The problem is to get the gas into all parts of the sand where there is oil and to prevent it wasting through parts where there is little or no oil. The gas will take the easiest and shortest routes from the pressure wells to the producers, and hence it has a marked tendency to pass around and not affect the tighter part of the sand. Back pressure will retard or prevent such. Without back pressure, the proportion of pressure wells to producers averages approximately one to three and by its use, approximates one to five or six producers.

Pressures

Gas enters the sand at the pressure vell, spreads out, and is distributed among the several adjacent producing wells. Each producer will get a fraction of the gas forced into the pressure well, and consequently the rate of movement of the gas through the sand near the producing wells is much less than near the pressure well. Hence it is apparent, that forcing a like amount of gas through a few pressure wells will necessitate a greater pressure than through a large number of pressure wells, sand conditions being the same. The pressure has little relation to the depth of the sand, but is intimately related to the character of the oil sands. Coarse porous sands take the lowest pressure, whereas fine, tight, or slaty require higher pressure. The pressure will also depend on the volume being forced into the sand as was indicated before.

Operating pressures range from 50 to 350 pounds and will average between 100 and 150 pounds. This will vary from well to well and from property to property. A test will only tell the specific pressure with the volume taken into consideration. There is always a maximum pressure which cannot be exceeded without increasing the size of the compressor, and always a minimum pressure below which the well takes but little gas. The former pressure indicates that a balance has been reached between the volume being forced into the sand at that pressure, the volume issuing at the producers at their given back pressure, or being wasted underground, and the frictional resistance offered by the oil sand.

Preparing Pressure Wells

After a well is decided on as a pressure well it is important to give it a trial for pressure, and if it then takes the gas at a reasonable pressure and results are produced, it can be definitely approved. Reversing the direction of flow has no detrimental effect on the sand or recovery so long as the oil is not forced into a dry sand, therefore if the well is not applicable it can be converted to a producer. In fact, experience has shown on certain properties that applying pressure and pumping a well alternately has greatly increased its production.

(To be continued)

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SOUTHEASTERN OHIO ASSOCIATION MEETING

LOGAN, Ohio, Dec. 28.—The annual meeting of the Southeastern Ohio Oil & Gas Producers' Association was held at Logan, Ohio, December 19. President O. C. Dunn of Marietta, Ohio, gave a resume of the association's activities during the past year and stated that he had every reason to feel that the coming year would result in a larger membership and greater service for its members.

A. E. Faine told of experiments with various solvents for wax in wells and said he and an Ohio University professor had reached the conclusion that hot oil is the best solvent for paraffin and hot water was the best solvent for salt. He said that hot oil run into a shot hole will greatly increase the production of the well without the great expense of reshooting.

Barton A. Holl, one of the directors of the association and president of the Logan Chamber of Commerce, brought up the 20-cent differential affecting the producers of southeastern Ohio. Mr. Holl stressed the apparent unfairness of this differential and suggested that the organization employ an engineer to make a study of the production and distribution of the oil. One of the solutions, in securing a fair and equitable price for its crude, he said, would be the erection of a refinery. Mr. Holl further stated that the Logan Chamber of Commerce has set aside $10,000 for the purchase of a site for a refinery in case any independent refiner or any other responsible group wished to build a plant in this city. After some discussion of the differential by the various members, the association voted favorably on a motion authorizing the president to appoint a committee to call on L. W. Young, Jr., of the South Penn Oil Co. which is the principal buyer of southeastern Ohio crude through the Joseph Seep Purchasing Agency, with a view of securing relief from this differential. Members appointed are: H. D. Atha, Logan, Ohio; O. C. Dunn and H. B. Goddard, Marietta, Ohio, and A. E. Faine, New Straitsville, Ohio.

A. H. Squier of Reno, Pa., brought up the suggestion of having all oil run to the credit of the Government which would then have definite information as to supply on hand and thus lend the proper curtailment methods to same. The matter was referred to the board of directors for further consideration.

O. D. McPheron and H. B. Goddard made a report on present methods and values used in county taxation on oil and gas properties. At present each county auditor figures the valuation at a different figure, and taxable values now run from $1,000 to $1,800 per barrel per day. In this connection O. D. McPheron, of Marietta, Ohio, chairman of the tax committee, was authorized to represent the organization at the next meeting of county auditors and State Tax Commission, relative to a proper and fair basis for county taxation of oil and gas properties.

Round table discussion followed with E. J. Mildren, H. Barber, W. E. Burns and many others taking part stressing the value and importance of continued co-operation among its members, and the importance of pushing and using their own products.

The election resulted in the board of directors being re-elected as follows: A. D. Hufford, Bremen, O., H. D. Atha, Logan, O., B. A. Holl, Logan, O., W. E. Burns, Marietta, O., O. C. Dunn, Marietta, O., H. B. Goddard, Marietta, O., E. J. Mildren, Marietta, O., F. N. Stover, New Matamoras, O., A. E. Faine, New Straitsville, O., F. W. Douglass, Woodsfield, O., and H. E. Stewart, Columbus, O.

The following officers were elected for the ensuing year: President, E. J. Mildren, Marietta, O.; vice president, H. B. Goddard, Marietta, O.; vice president, F. W. Douglas, Woodfield, O., secretary-treasurer, W. L. Franks, Logan, O.

President Mildren announced the following committee chairmen: Marketing H. D. Atha, Logan, O.; legislative, A. E. Faine, New Straitsville, O.; membership, B. A. Holl, Logan, O.; production, F. N. Stover, New Matamoras, O.; taxation, O. D. McPheron, Marietta, O.; publicity, W. L. Franks, Logan, O.

The secretary and treasurer's report showed a healthy condition of the treasury and a successful membership campaign during the year which was in charge of E. J. Mildren.

G. G. RAMSDELL DIES; GAS UTILITY PIONEER

George G. Ramsdell, one of the early developers of the American gas industry and senior member of the headquarters staff of the American Gas Association, died at his home, Jackson Heights, L. I., after a brief illness of pneumonia. He was 81 years old.

Mr. Ramsdell was born in Providence, R. I., and was educated at Vincennes University, graduating in 1863. His efforts to form a company to heat Vincennes from a central plant caused the Citizens Gas Co. of that city to appoint him manager and treasurer in 1877. In 1880 he brought to this country a 17-horsepower gas engine, the first large gas engine ever imported to the United States.

In 1890 he moved to Philadelphia to act as general manager of the American Gas Co. In 1905 he became president of the Ramsdell Inverted Gas Lamp Co.

He was one of the first directors of the American Gas Institute on its formation in 1906 and was elected secretary in 1911, serving until the amalgamation with the American Gas Association.

He was president of the Western Gas Association in 1889 and of the American Gas Light Association in 1899.

JOHN DARR RETIRES AFTER LONG SERVICE

OIL CITY, Pa., Dec. 31.—On the first of the new year John Darr of Pittsburgh, superintendent of the telegraph departments of the Southern Group of Pipe Lines will retire after 50 years of continuous active service. Mr. Darr began work as a messenger boy in the telegraph department of the Western Union Telegraph Co. in the old Oil Exchange in Oil City. Later he became identified with the Standard Oil Co.'s interests and moved to Pittsburgh and was made general superintendent of the Southern Group telegraph departments.

Owing to his genial and accommodating manner he made many friends with operators and those associated with him. As an expression of their friendship and esteem, the heads of the department and associates have presented Mr. Darr with a handsome gold watch. John Kenney, assistant general manager of the Eureka Pipe Line Co. made the presentation and Mr. Darr, although somewhat surprised made the response in a happy vein.

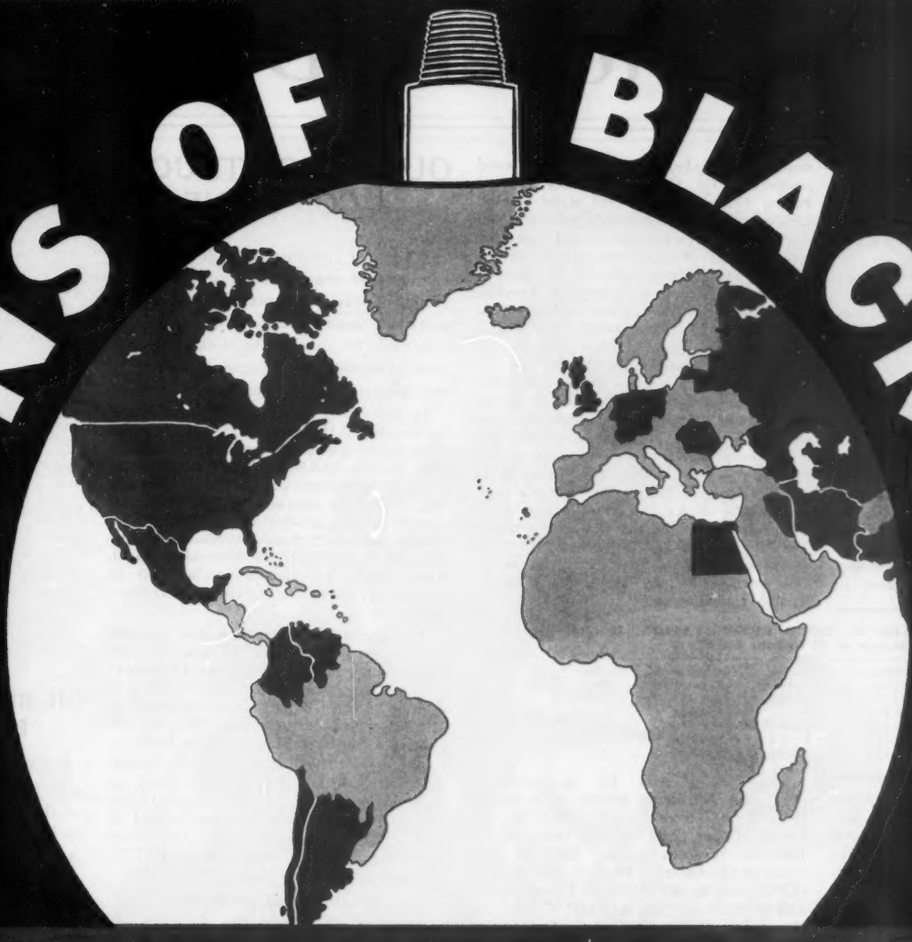
CITY CONTESTS GAS TAX

The City of Fort Worth, Tex., has notified state officials that it intends to test the right of the State of Texas to impose the gasoline tax in purchases of gasoline made by cities within the State. The attorney general of the State has ruled that all gasoline purchased by cities is subject to the same tax as is paid by other buyers. The city of Fort Worth proposes to buy a tank car of gasoline and then refuse to pay a tax. In this manner the matter will be brought to the attention of the state courts.

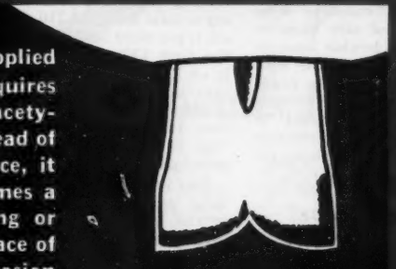
EXPLOSION COST TWO MILLIONS

The Equitable Gas Co. of Pittsburgh, Pa., has paid $2,084,694 in damages since the Manchester gas tank explosion two years ago. Of a total of 4,950 claims presented 4,117 have been settled and the remainder are still under negotiation, according to the company's figures.

TONS OF BLACKOR



NOW CUTTING DRILLING COSTS



BLACKOR is easily and quickly applied with the carbon electric arc. It requires no previous experience nor the use of acetylene or oxygen in its application. Instead of merely "sticking" to the outer surface, it penetrates the steel and actually becomes a part of the steel, preventing chipping or breaking off. It covers the entire surface of those parts of the tool subject to abrasion and leaves no unprotected spots where rapid abrasion can occur.

Put Blackor to the test yourself! A trial order will be shipped immediately at your request.

Licensed Under Patent Numbers: 1,613,942 1,424,536 359,925 10,021 16,347 15,311 2,580 1,069. Reissue No. 17,323. Other Patents Pending.

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Blackor is a black, granular material made from the highest grade tungsten. It can be applied at the rate of 100 square inches per hour at a power cost of 10 cents per hour. Complete working instructions are furnished with each order.

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BLACKOR

The Super Abrasion-Resistant Facing

Of Interest to Sales Departments

Oil for Preserving Crossties Gains in Favor With Buyers

In the preservative treatment accorded railroad crossties with a petroleum-creosote mixture, an average of 1.3 gallons of naphthene base crude or residue oil is consumed for each crosstie treated. Although an insignificant amount when a single crosstie is considered, when multiplied by the 17,719,179 crossties so treated during 1928, the quantity of petroleum consumed reached a total of 23,034,933 gallons, or 548,451 bbls. The total consumption of petroleum in wood preservative treatment during 1928 was 25,075,903 gallons, or 597,045 bbls., an increase of 124 per cent over the quantity consumed in 1924. The balance of 2,040,970 gallons, or 48,594 bbls., between the total consumption and that used in preserving crossties was consumed in the petroleum-creosote mixtures used in preserving switch ties, piles, poles, wood blocks, cross arms, construction timbers and miscellaneous material.

PETROLEUM CONSUMED IN WOOD PRESERVATION, 1924-1928
(In Barrels of 42 Gallons Each)

	Region					
Year	Atlantic Coast	Southern Coast	Interior Eastern	Interior Western	Pacific Coast	Total
1928	88,389	141,254	108,529	107,479	151,394	597,045
1927	42,716	180,975	93,731	99,954	128,127	545,503
1926	48,666	83,983	52,627	55,610	76,186	317,072
1925	57,088	107,569	42,138	47,870	56,014	310,679
1924	50,651	95,720	36,584	49,096	34,124	266,175

This increased use of petroleum is shown in the annual statistical reports compiled co-operatively by the United States Forest Service and the American Wood-Preservers' Association. These reports are based upon statistical data received from concerns in the United States which maintain treating plant equipment of either the pressure cylinder or open-tank type, but do not include the material that is field treated or merely brush treated or that which receives treatment in small quantities with temporary apparatus. At the close of 1928, there were 207 treating plants in the United States, of which 193 were in active operation and 14 were idle. Of the 207 plants in existence, 142 were commercial plants that treat wood for sale or by contract, 34 were owned and operated by railroad for the treatment of various kinds of maintenance of way equipment, and 31 were in private ownership by public utility corporations, mining companies or the United States Government. The names and locations of these plants may be obtained from the United States Forest Service, Washington, D. C.

Number Treated

During 1928, the petroleum-creosote mixture was used in the preservation of one-fourth of all crossties treated. The proportion of crossties treated with the petroleum-creosote mixture has increased yearly since 1924, when 11.86 per cent were so treated. The total number of crossties treated and the number treated with the petroleum-creosote mixture for each of the years is shown in the following table:

CROSSTIES TREATED WITH PETROLEUM-CREOSOTE MIXTURE, 1924-1928

Year—	Number of crossties treated	Number treated with petroleum-creosote mixture	Per cent treated with petroleum-creosote mixture
1928	70,114,405	17,719,179	25.2
1927	74,231,840	15,791,147	21.27
1926	62,654,538	9,376,380	14.96
1925	62,563,911	9,229,599	14.75
1924	42,632,710	7,430,840	11.86

Approximately 90 per cent of the petroleum consumed at wood-treating plants is used as a diluent with creosote in the treatment of crossties. The remaining 10 per cent is used in the treatment of a number of miscellaneous wood products. Of the switch ties treated during 1928, 16.3 per cent were treated with the petroleum-creosote mixture and this material was also used for the treatment of 9 per cent of the bridge timbers and 15 per cent of the miscellaneous construction materials treated. The other products treated include piles, poles, lumber, fence posts, tie plugs, crossing planks and anchor logs.

Consumption by Areas

All sections of the country have reported an increased use of petroleum for the preservation of wood products, but the gain is most pronounced on the Pacific Coast, where the consumption has increased from 34,124 bbls. in 1924 to 151,394 bbls. in 1928. The interior eastern region shows the next largest gain, increasing from 36,584 bbls. in 1924 to 108,529 bbls. in 1929. The quantities of petroleum consumed in wood preservation during the past five years is shown in the following table:

The prices paid by wood-treating plants for petroleum during 1928 ranged from 2 to 6.5 cents per gallon on the Pacific Coast, 2.69 to 8.45 cents in the Interior Western region, 2.69 to 5.53 cents in the Interior Eastern region, 2.98 to 6.5 cents in the Southern Coast region, and 5 cents on the Atlantic Coast. In the price ranges indicated, the lowest price is the one paid by the large consumer, and the highest represents the cost to the small user.

Experimental Work

During 1928, 320,046 crossties were treated with a mixture of zinc chloride and petroleum. A considerable amount of experimental work has been done with Mexican (Ebano) and California crude oil in an endeavor to obtain a petroleum-zinc chloride mixture which could be substituted for the petroleum-creosote mixture. It is reported that these ex-

(Continued on Page 164)

VALUE OF OIL FILTERS

The California Agricultural Experiment Station shows that the use of oil filters keeps the lubricating oil in good condition and lengthens the life of cars. The tests were conducted under the supervision of Prof. A. H. Hoffman. Two Chevrolet cars, a roadster with delivery body and a coach, were used, the filter being bypassed on the roadster but left to function on the coach. The principal wearing engine parts of both cars were measured and, where feasible, weighed before the test.

After each car had been run about 10,000 miles of approximately equivalent use, the machines were sent in and remeasured. The average wear on the piston rings as determined by loss of weight was approximately twice as much on the machine without the filter. The wear on pistons, cylinders, wristpins, crankpins and crankpin bearings was too slight to justify the drawing of any conclusions.

OUTPUT OF TRUCKS AND TAXICABS CONTINUES TO SHOW STEADY GAIN

While the production of automobiles has declined rapidly in recent weeks the output of trucks and taxicabs, the largest users of gasoline and lubricating oils, continues to exceed the totals of last year according to reports collected by the Department of Commerce.

In November the latest report of the Government, the production of automobiles listed under the general classification of cars totaled 169,309 which compares with a total of 216,754 in November, 1928. In contrast to this large decrease in car production the output of trucks increased from 39,686 in November, 1928, to 46,513 in November, 1929. The taxicab production totaled 700 in November, 1928, and 1,619 in November, 1929.

The production of trucks and taxicabs has shown a consistent increase over the same month in 1928. For the 11 months ending December 1, 1929, the truck production totaled 724,424, an increase of 221,637 or 44 per cent over the 502,787 total for the first 11 months of 1928.

A total of 16,079 taxicabs were manufactured the first 11 months of 1929, an increase of 10,402 or 183 per cent over the 5,677 total for the same period in 1928. It is expected that the truck production for the year will total 775,000 and the taxicab production 17,000.

Greater Total Production

Although the production of cars and total vehicles of all types was less in November and October, 1929, that in the same period of 1928, the output for all of 1929 will be greater than 1928. According to reports from 148 manufacturers a total of 5,235,316 motor vehicles of all types were sold by the manufacturers the first 11 months of this year. This is an increase of 1,110,673 or 27 per cent over the same period in 1928. The car production increased from 3,616,179 the first 11 months of 1928 to 4,494,813 the first 11 months of this year, an increase of 24 per cent.

The increase for the year is due to the large gains made the first nine months of this year. Since that time there has been a decline when compared with the 1928 production figures as shown in the accompanying table. The large increase in production the first nine months of 1929 coming primarily from the factories of the Ford Motor Co. which will produce approximately 2,000,000 units in 1929, no doubt accounts for the exceptionally heavy gain in gasoline consumption.

Those in touch with the automobile situation agree that the car production at least for the first six months of 1930 will be less than in the same period of 1929. However, it is pointed out that a substantial gain in gasoline consumption is assured due to the fact that all of the cars manufactured in 1929 will be in operation. The fact that the largest gain has been in the type of vehicles which are the largest consumers of gasoline is also a favorable factor in gasoline consumption.

The following table summarizes the production:

Automobile Production in the United States
(Number of machines)

1928—	Total	Cars	Trucks	Cabs†
Jan. ...	231,728	205,142	26,082	504
Feb. ...	323,796	290,689	32,645	462
Mar. ...	413,314	371,150	41,493	671
Apr. ...	410,104	364,265	45,227	612
May ...	425,783	375,356	49,920	507
June ..	396,796	356,214	40,174	408
July ...	392,086	338,383	53,294	409
Aug. ...	461,298	400,124	60,705	469
Sept. ..	415,314	358,615	56,423	276
Oct. ...	397,284	339,487	57,138	659
Nov. ...	257,140	216,754	39,686	700
Total 11 mos..	4,124,643	3,616,179	502,787	5,677
Dec. ...	234,116	204,957	28,123	1,036
Total year ..	4,358,759	3,821,136	530,910	6,713
1929—				
Jan. ...	401,037	347,382	51,591	2,064
Feb. ...	466,353	405,708	58,537	2,108
Mar. ...	585,223	513,344	69,800	2,079
Apr. ...	621,347	537,226	82,436	1,686
May ..	604,084	516,055	86,711	1,318
June ..	545,356	452,598	91,380	1,378
July ...	500,392	426,137	73,201	1,054
Aug. ...	498,375	441,942	55,393	1,040
Sept. ...	415,697	364,786	50,046	865
Oct. ...	*380,011	320,327	*53,816	868
Nov. ...	217,441	169,309	46,513	1,619
Total 11 mos. ..	5,235,316	4,494,813	724,424	16,079

*Revised.
†Includes only factory-built taxicabs, and not private cars converted into vehicles for hire.

OIL BURNER MAKERS PLANNING EXHIBITION

NEW YORK, Dec. 28.—The rapid sale of space for the first annual show of the American Oil Burner Association, to be held at the Hotel Stevens, Chicago, April 7-12, next, is a clear indication of the interest and enthusiasm of burner manufacturers, says the association in a bulletin to the trade.

"Undoubtedly" says the association, "the first public oil burner exposition will be a great success and every effort is being made at headquarters to attain that end."

Manufacturers who have booked exhibits thus far include the following: Automatic Burner Corp., American Radiator Co., Bryan Steam Corp., Bettendorf Oil Burner Co., Cleveland Steel Products Co., Cook Electric Co., Combination Boiler Co., Crystal Oil Burner Corp., Century Engineering Corp., Draft-A-Juster Corp., Enterprise Oil Burner Co., Electrol, Inc., General Electric Co., International Burners Corp., S. T. Johnson Co., Janette Manufacturing Co., King-Seeley Corp., Lassen & Bissel, Inc., Mayflower Oil Burner Corp., May Oil Burner Corp., Mercoid Corp., Minneapolis-Honeywell Regulator Co., Motor Wheel Corp., McIlvane Burner Corp., Nu-Way Corp., Petroleum Heat & Power Co., Preferred Utilities Manufacturing Co., Preferred Oil Burners, Inc., Progressive Machinery Co., Petrometer Corp., William H. Pascoe Co., Inc., Refractory & Engineering Corp., Super Oil Heater Corp., Silent Automatic Corp., Silent Glow Burner Corp., Sword & Kimber Co., Time-O-Stat Controls Co., Titeflex Metal Hose Co., Teesdale Manufacturing Co., Tuthill Pump Co., Timken-Detroit Co., Taco Heaters, Inc., Winslow Boiler & Engineering Co., Webster Electric Co., Westinghouse Electric & Manufacturing Co., and Wayne Home Equipment Co.

ASSOCIATED 1930 EXPANSION

SAN FRANCISCO, Calif., Dec. 27.—The Associated Oil Co. in 1930 will spend approximately $2,000,000 in expanding its marketing facilities, according to an announcement by William F. Humphrey, president of the company. The program for the coming year includes the installation of additional bulk and service stations in West Coast states. Several airport service stations will be built in California, Oregon and Washington.

Final Quality Depends First, on the Crude

OVER 11,000 producing wells feed the pipe lines leading to Pure Oil's large, modern refineries. Some of this crude is rich in gasoline content; some is valuable for making high grade motor oil; while some is best suited as a base for industrial oils or greases. But, because Pure Oil controls this vast production, it has a sure supply from which its experts select the cream of the crudes for refining each product.

Every step in the producing, refining, and marketing of Pure Oil products is efficiently handled by Pure's own organization. That is why Pure Oil products are uniformly good . . . always delivered on the dot!

Tune in on the PURE OIL BAND
Conducted by Edwin Franko Goldman
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Providence, R. I.
New York Harbor (Bayonne, N. J.)
Jacksonville, Fla.
Port Tampa, Fla.
Mobile (Magazine Point, Ala.)
Philadelphia (Girard Point, Pa.)
Charleston, S. C.
Savannah, Ga.
New Orleans (Gretna, La.)
Port Arthur, Texas
Galveston, Texas

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

(Continued from Page 46)

E. L. Love and others' No. 1 White, SE cor. NW Sec. 9-24-6w ..... Fishing 5,566 ft.

GRADY COUNTY

J. V. Bailey's No. 1 Hubbard, C NE NW Sec. 1-10-6w ... Spudded and shut down.
J. M. Henry and others' No. 1 Abraham, SE cor. NW Sec. 4-5-8w ..... Rig.

GRANT COUNTY

Gypsy Oil Co.'s No. 1 Belderbeck, C SE SE Sec. 27-28-7w .. Drlg. 5,081 ft.; 8-in. csg.
Bailey's No. 1 Stover, C SW SE Sec. 20-27-5w ..... Rig on ground.
Baucher et al's No. 1 Deadman, SW SE Sec. 13-28-4w .. Drlg. 4,655 ft.
Cowden and others' No. 2 Vollmer, CEL NE SW Sec. 22-25-4w ..... Shut down 5,640 ft.
Otstot's No. 1 Tabor, C NE NE SE Sec. 23-26-3w ..... Drlg. 2,690 ft.

GARVIN COUNTY

Pickham-Harris' No. 1 Community Gaines, C NW NE Sec. 11-4-1 ..... Location.

GREER COUNTY

Helmerick & Payne's No. 1 Henck, NW cor. Sec. 23-6-24w. Shut down 2,205 ft.
I. T. I. O. and others' No. 1 fee, C SW NE Sec. 17-6-24w ..... Straightreaming 1,902 ft.

HARMON COUNTY

Harmon-Tex Oil Co.'s No. 1 Hoadley, NE cor., Sec. 17-4-24w ..... Drlg. 390 ft.
S. M. Stauffer's No. 1 Castleman, SW NE Sec. 8-4-26w .. Shut down 625 ft.

HARPER COUNTY

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w ..... Fishing 6,161 ft.

HASKELL COUNTY

Holden's No. 1 Phillip, SE cor. Sec. 3-9-18e ..... Drlg. 1,690 ft.
Marion Oil's No. 1 Sanders, NW NE SW Sec. 10-9-18e .. Shut down 2,387 ft.
Sanboise Gas' No. 1 Unknown, SW NW SE Sec. 32-9-21e .. Shut down 2,100 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11 ..... Rig.
Canady et al's No. 1 Kanard, NW SW Sec. 29-9-12 ..... Fishing 2,175 ft.
Irwin et al's No. 1 Jones, SE NW Sec. 30-5-10 ..... Rig on ground.

JACKSON COUNTY

Altus Oil Co.'s No. 1 Northington, NE cor. NE Sec. 4-1-20w ..... Shut down 2,020 ft.

KINGFISHER COUNTY

Superior Oil Co.'s No. 1 Story, SE cor. Sec. 25-19-5w .... Fishing 6,285 ft.
Galt Brown's No. 1 Wolf, NW SE Sec. 6-16-7w ..... Shut down 6,015 ft.

KIOWA COUNTY

J. D. Flannery's No. 1 Renave, SW cor. Sec. 25-6-18w ... Total depth 1,006 ft.; abandoned.
Hyde et al's No. 1 Jones, SE cor. Sec. 23-3-18w-50 ..... Shut down 490 ft.
Merrick Oil Co.'s No. 1 Kelly, NW cor. SE Sec. 20-7-17w .. Shut down 1,165 ft.

LEFORE COUNTY

Red Bank Oil Co.'s No. 1 fee, SE SW NW Sec. 23-9-24 .. Fishing 5,400 ft.; 15,000,000 ft. gas.

LATTIMER COUNTY

Limestone O. & G. Co.'s No. 1 Shaw, NW cor. NE NW Sec. 23-5-18e ..... Shut down 1,450 ft.
Limestone Oil & Gas Co.'s No. 1 McMurray, SW cor. SW Sec. 15-5-18 ..... Total depth 4,020 ft.; plug back to 2,550 ft.

LINCOLN COUNTY

Phillips Pet. Co.'s No. 1 Stephens, SE cor. NW Sec. 29-12-3 ..... Drlg. 5,570 ft.

LOGAN COUNTY

Currier's No. 1 Young, C SW NE SW Sec. 34-17-4w .... Rig.
Haley & Smith's No. 1 Guier, SE cor. SW Sec. 33-18-3w .. Shut down 3,970 ft.

McCLAIN COUNTY

Homaokla Oil Co.'s No. 1 Newsome, SE NE NE Sec. 16-5-3 ..... Total depth 3,605-85 ft.; pumping 40 bbls.; completed.

McINTOSH COUNTY

Jennings Bros.' No. 1 Crabtree, NW SW NE Sec. 31-10-14 ..... Drlg. 3,300 ft.
Patterson and others' No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shot 240 qts. 5,446-5,559 ft.; shot went off up hole; fishing.

MUSKOGEE COUNTY

Sessions' No. 1 Richard, SE cor. SW Sec. 29-13-19 ..... Water 1,140-75 ft.; abandoned.
Mid-Western Oil Co.'s No. 1 Unknown, C NW SW Sec. 31-12-19 ..... Location.
Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 .... Shut down 1,011 ft.
Cooper-Badget's No. 1 Young, NW NE NE Sec. 7-12-20e .. Shut down 50 ft.

NOBLE COUNTY

Gypsy Oil Co.'s No. 1 Bergstrom, SE NE Sec. 28-22-1w .. Location.
Peerless et al's No. 1 Wentz, NW SW Sec. 22-22-1 ..... Drlg. 3,279-82 ft.; 45 bbls. oil; show water.

OKFUSKEE COUNTY

Henry Oil Co.'s No. 1 Harjo, Sec. 36-12-9 ..... Shut down 2,795 ft.
E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10 .. Shut down 3,661 ft.

OKLAHOMA COUNTY

Magnolia and Ramsey's No. 1 Johnson, C NE SW Sec. 35-13-3w ..... Drlg. 3,114 ft.
Ryan & Martin's No. 1 Lawton, NE NW Sec. 3-11-2w .. Fishing 3,600 ft.
Tom Slick Oil Co.'s No. 1 Martin, C NW NW Sec. 13-13-1w ..... Drlg. 6,911 ft.
Hall & Briscoe's No. 1 Holmes, NE cor. SW SE Sec. 10-11-3w ..... Fishing 4,750 ft.

PITTSBURG COUNTY

Mid-Western Oil Co.'s No. 1 Unknown, SE SW NE Sec. 11-7-13 ..... Drlg. 1,675 ft.
Empire O. & R. Co.'s No. 1 Williams, C NE SE Sec. 33-7-16e ..... Fishing 3,120 ft.
Kerr & Koy's No. 1 Hall, C NW NW Sec. 32-4-12 ..... Drlg. 3,300 ft.

PONTOTOC COUNTY

Independent and Shaffer's No. 1 Moses, NE SE SW Sec. 10-5-4 ..... Wilcox 3,332-41 ft.; abandoned.

POTTAWATOMIE COUNTY

Keister & Manning's No. 1 Rowlett, SW SE NE Sec. 30-8-4 ..... Drlg. 2,635 ft.
Payne Drlg. Co.'s No. 1 Bullock, SE NE Sec. 22-6-3 .... Drlg. 3,650 ft.
Twin State's No. 1 Ray, NW SW Sec. 3-8-4 ..... Drlg. 4,295 ft.
Prairie O. & G. Co.'s No. 1 Bodkin, SW cor. Sec. 26-8-4 .. Drlg. 3,870-3,990 ft.; swabbed 110 bbls.; total depth 4,090 ft.

ROGER MILLS COUNTY

Bucy & Stone's No. 1 Williams, C SW Sec. 23-12-24w .... Rig.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Shut down 1,800 ft.

SEMINOLE COUNTY

Magnolia's No. 1 Webster, NE SE NW Sec. 31-6-8 ..... Rig.
Prairie's No. 1 Mingo, SE NE Section 25-6-5 ..... Drlg. 4,018 ft.
Prairie O. & G. Co.'s No. 1 Harjo, NE SW NE Sec. 25-6-7 ..... Drlg. 3,840 ft.
Sunray Oil Co.'s No. 1 Sunday, NW SE Sec. 25-5-5 ..... Location.

SEQUOYAH COUNTY

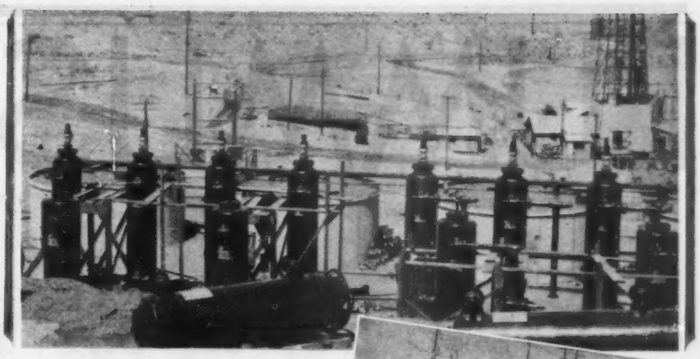
Hunt and others' No. 1 Unknown, SE cor. NW SW Sec. 12-12-22 ..... Shut down 1,260 ft.
Buffington and others' No. 1 Melcher, C SW NW Sec. 31-12-24 ..... Shut down 3,000 ft.

WOODS COUNTY

Peerless O. & G. Co.'s No. 1 Crowell, C NW NE Sec. 23-28-16w ..... Shut down 1,500 ft.
S. K. Miller's No. 1 Copenhavers, NW cor. NW Sec. 18-24-13w ..... Rigged up and shut down.
Gypsy-Prairie and others' No. 1 Thompson, SE cor. SW Sec. 10-25-15w ..... Drlg. 6,054 ft.
Sinclair Oil & Gas Co.'s No. 1 Showwalter, C SW SW Sec. 33-27-16w ..... Drlg. 5,835 ft.

WOODWARD COUNTY

Farrond et al's No. 1 Unknown, SE cor. SW SE Sec. 2-23-17w ..... Shut down 1,387 ft.



Indisputable Evidence of Lorraine **LEADERSHIP**

THE comparative number of Lorraine Traps in service in every oil field provides incontestable proof of the operator's choice in gas traps.

This overwhelming preference for Lorraine traps is of many years standing, and is based upon better performance, higher efficiency, greater economy and more satisfactory results in service.

Lorraine Traps embody every feature desirable in equipment of this type — many of which are found only in Lorraine traps.

THE LORRAINE CORP.
MANUFACTURERS AND DISTRIBUTORS
OIL WELL SPECIALTIES
115th and Alameda Streets
Los Angeles, Calif.

The Lorraine Type "M" Automatic Gas and Oil Separator.

Designed especially to handle a large quantity of gas at atmospheric pressure; with only an ordinary quantity of oil. Complete information in our descriptive folder.

Mid-Continent Distributors:
The National Tank Co.,
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LORRAINE
GAS AND OIL SEPARATORS

LUMMUS

A Lummus Fractionating Tower --- weighing 105 tons, part of two complete pipe still units processing 20,000 barrels of Winkler crude per day.

The Walter E. Lummus Co.

148 State Street, Boston

30 Church Street, New York

PETROLEUM PLANTS

Prairie Oil & Gas and others' No. 1 Wilber, NE cor. NW Sec. 23-23-17w .....Drlg. 5,935 ft.
Billy's Oil Co.'s No. 1 Watt, C SE Sec. 9-23-20w .....Fishing 4,968 ft.
Burgoyne Bros.' No. 1 Merkins, SW cor. SE NE Sec. 15-21-19w .....Shut down 1,910 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

J. W. Ernest and Bryant's No. 1 Unknown, NW cor. Sec. 6-1-14 .....Shut down 800 ft.
Bryant-Croxton's No. 1 Mason, NW NE NW Sec. 4-1s-14.Shut down 800 ft.
Bookshire's No. 1 Guinn, NW cor. Sec. 18-3s-10 .....Shut down 100 ft.

BRYAN COUNTY

Marshall's No. 2 fee, C SW SE NW Sec. 26-5s-7 .....Shut down; 6-in. csg. 265 ft.
Yale Oil Syndicate's No. 1 Craige, C NW NE Sec. 36-9s-9e .....Shut down 1,960 ft.

CARTER COUNTY

Campen-Lasater Co.'s No. 1 Anderson, NE cor. SE NE SE Sec. 32-4s-2 .....Fishing 1,980 ft.

CHOCTAW COUNTY

Choctaw Petroleum Co.'s No. 1 Wilson, SW cor. SW Sec. 15-6-19e .....Shut down 1,346 ft.

COTTON COUNTY

T. Medlin's No. 1 Johns, SW SE Sec. 3-2S-9w .....Rig.

JOHNSTON COUNTY

Smith & Knisely's No. 1 Lane, E half Sec. 29-1s-7.....Shut down 2,254 ft.

McCURTAIN COUNTY

Utopia Pet. Co.'s No. 1 Unknown, SE NW Sec. 14-9s-25..Location.
Milton et al's No. 1 Vase, SW NW Sec. 26-6s-21 .....Shut down 1,490 ft.

STEPHENS COUNTY

Smythe et al's No. 1 Johnson, NE cor. Sec. 30-2-8w ....Drlg. 1,004 ft.

TILLMAN COUNTY

Allen Bros.' No. 1 Howell, SW NE Sec. 13-1-17w .....Shut down 610 ft.
Nance et al's No. 1 Massie, NE NW Sec. 36-1S-6w ....Location.
Landfair and others' No. 1 Smith, SE SW SE Sec. 6-2s-16w .....Shut down 2,535 ft.

OKLAHOMA PANHANDLE

Skaer's No. 1 Hitch, NW cor. Sec. 25-1-15e .....Shut down 250 ft.

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless otherwise marked)

(Continued from Page 48)

Derby Oil Co.'s No. 1 Meimueller, C NW SW Sec. 9-10-3e..Shut down 3,045 ft.
Skow Bros.' No. 1 Strud, SW SE Sec. 16-9-4 .....Total depth 2,510 ft.; abandoned.

COWLEY COUNTY

Edenfield & Fair's No. 1 Wallace, CWL NE Sec. 17-34-4..Shut down 365-75 ft.; 2,000,000 ft. gas.
Fine et al's No. 1 Brown, SE cor. Sec. 8-32-4 .....Drlg. 422 ft.
Prairie's No. 1 Leighty No. 1 Ball, SW SE Sec. 4-30-5....Drlg. 2,307 ft.
Milton & Mead's No. 1 Tatum, SE cor. SW Sec. 11-31-6..Shut down 1,920 ft.
Roth & Farrout's No. 1 Thompson ,NE SE Sec. 31-31-8..Show oil 1,975-91 ft.; total depth 2,001 ft.
Shawver et al's No. 1 Oldham, NW SE Sec. 23-32-3 ....Wilcox sand 3,476-86 ft.; water; abandoned; total depth 3,543 ft.

COFFEY COUNTY

Cross et al's No. 1 Fessen, SW NE Sec. 33-22-14 .....Drlg. 860 ft.

DICKINSON COUNTY

Cress' No. 1 Sanden, NE cor. Sec. 12-15-2 .....Rig.
Prairie's No. 1 Lachard, C NW SW NE Sec. 12-16-2 ....Drlg. 1,350 ft.
Hiatt & Durham's No. 1 Wendt, NW cor. Sec. 17-16-2 ..Spudding.
Kruger et al's No. 1 Diche, C NW NE NE Sec. 17-13-4 .....Drlg. 2,270 ft.
E. N. Morgan's No. 1 Whithair, NW SE Sec. 9-12-1 ....Drlg. 100 ft.

DOUGLAS COUNTY

Jenkins & Scott's No. 1 Haden, SE NW Sec. 10-12-17 ....Shut down 550 ft.

EDWARDS COUNTY

Skelly's No. 1 Johnson, NE SW Sec. 21-26-17w .....Drlg. 2,675 ft.
Barnsdall Oil's No. 1 McCarty, NW NE Sec. 31-25-17w..Drlg. 2,010 ft.
Dixie & Amerada's No. 1 McCarty, SW cor. Sec. 22-25-17w .....Drlg. 2,180 ft.

ELK COUNTY

Empire and Arkansas Fuel's No. 1 Record, C NW NE SE Section 32-30-10 .....Underreaming 8-in. csg.; total depth 1,603 ft.

ELLIS COUNTY

Streeter & Stearns' No. 1 Leiker, SW NE Sec. 26-13-20w.Shut down 1,290 ft.
Byrene et al's No. 1 Fisher, NW SE Sec. 4-11-20w ....Shut down 1,000 ft.
Rush Oil Co.'s No. 1 Gatewood, NW cor. NW Sec. 4-15-20w .....Fishing 2,555 ft.

ELLSWORTH COUNTY

Tatlock et al's No. 1 Sackem, C SW SE Sec. 25-17-9w ..Drlg. 1,165 ft.
The Texas Company's No. 1 Sherman, NE SW Sec. 16-17-6w .....Total depth 4,042 ft.; abandoned.

FORD COUNTY

McNabb et al's No. 1 Unknown, C SE Sec. 26-27-22w....Shut down 400 ft.
Swain et al's No. 1 Kenthorne, C NW Sec. 21-25-24w ..Shut down 390 ft.

GRAHAM COUNTY

Gulf Coast Oil Co.'s No. 1 Johnson, C S half Sec. 27-8-25w .....Water 4,331-45 ft.; abandened.
Naylor et al's No. 1 St. John, NW SE SE Sec. 27-8-25w..Rig; abandoned.

GREENWOOD COUNTY

Ward & McGinnis' No. 1 Henley, SW NE Sec. 23-25-9 ..Rig.
F. Konkay et al's No. 1 Rock, NW NE NE Sec. 7-27-12 ..Drlg. 400 ft.

HARPER COUNTY

Boeler et al's No. 1 Bear, C NE Sec. 21-31-6w .....Shut down 440 ft.

HARVEY COUNTY

Superior's No. 1 Regier, SE NW Sec. 11-22-3w .....Drlg. 2,615 ft.
Independent & Reserve Oil Co.'s No. 1 Moulds, C NE Sec. 7-24-1w .....Drlg. 3,792 ft.
Liggett et al's No. 1 Regier, C SE NW SE Sec. 2-23-3w..Drlg. 3,240 ft.
E. W. Marland, Inc.'s No. 1 Neiman, C NE SE NE Sec. 8-24-2 .....Drlg. 2,890 ft.
McCulloch et al's No. 1 Prouty, NW cor. SW Sec. 3-23-1w .....Drlg. 3,501 ft.
Mrs. Gay et al's No. 1 Grove, C NW NE NW Sec. 29-23-1w .....Shut down 3,360 ft.
Jolly & Ogg's No. 1 Randall, NE cor. NE Sec. 11-24-1w..Shut down 3,444 ft.
Jolly & Ogg's No. 1 Hupp, SE cor. NE Sec. 22-23-1w ....Shut down 3,220 ft.

HODGEMAN COUNTY

Phillips Pet.'s No. 1 Hausman, NW NE Sec. 30-22-22w..Drlg. 4,634 ft.

JEFFERSON COUNTY

Wichita Oil Co.'s No. 1 Simpson, NW cor. SW SW Sec. 19-10-17 .....Rigged up and shut down.

KINGMAN COUNTY

D. P. Fleeger's No. 1 Ashcraft, SE SW NE Sec. 16-28-7w .....Drlg. 3,970 ft.
White Eagle's No. 1 Lorenz, C NE SW SE Sec. 25-27-5w.Fishing 3,774 ft.

LANE COUNTY

Robinson's No. 1 Dickerson, Sec. 11-18-27w .....8-in. csg. 2,625 ft.
Blankenship Pet. Co.'s No. 1 Schaeffer, NE cor. NE Sec. 24-16-28w .....Abandoned 100 ft.

LYON COUNTY

Gordan-Stats' No. 1 Proche, C NE SE NW Sec. 16-17-10..Drlg. 1,400 ft.
F. A. Bailiere's No. 1 McKee, SW NE, 32-21-11.....Rig.

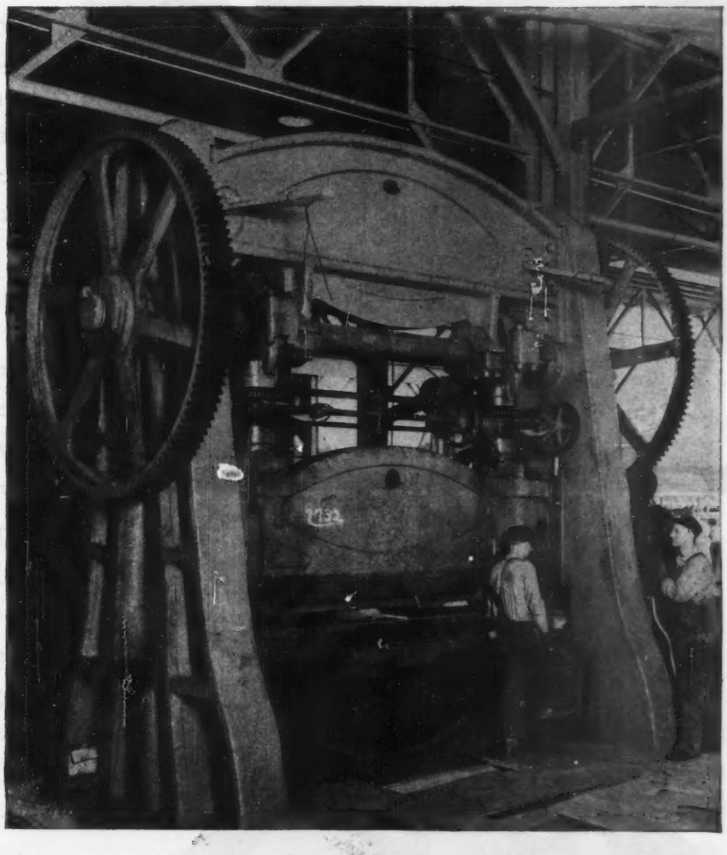
MARION COUNTY

Empire O. & R. Co.'s No. 1 Black, C NE NW SW Sec. 27-19-2 .....Rig.
Marshall et al's No. 1 Higgins, NE cor. Sec. 33-19-5 ....Rig.
White Eagle's No. 1 Ucker, NE NW Sec. 24-17-2 .....Drlg. 3,100 ft.

McPHERSON COUNTY

Galt Brown et al's No. 1 Zeitlow, C NE SE SE Sec. 7-17-1w .....Rig.
Dixie Oil Co.'s No. 1 Johnson, SW cor. Sec. 20-17-3w ..Drlg. 1,400 ft.
McCulloch Oil Co.'s No. 1 Cornelius, SW cor. Sec. 7-21-4..Drlg. 3,230 ft.
Kansas Oil Co.'s No. 1 Otto, SW NW Sec. 21-20-1w ....Drlg. 2,630 ft.
Reynolds et al's No. 1 Koohn, NE SE NE Sec. 15-20-2w ..Drlg. 3,200 ft.

EQUIPMENT
back of good service at *Wyatt's*



GIANT FORMING PRESS

THIS giant forming press is located at the Houston plant. Some idea of its size can be gained from a comparison with the men standing beside it.

This press with a gap of ten and a half feet stamps steel plates into shape with remarkable ease and efficiency. Other forming presses are located at the Dallas plant.

WYATT METAL & BOILER WORKS
DALLAS *Capital $1,000,000* HOUSTON

Wyatt's WYATT METAL & BOILER WORKS

Haynes Stellited Barber Greene Ditcher Teeth Last Four to Five Times as Long

A STUDY of time and production losses incident to replacement of worn parts prompted Barber Greene engineers to make a thorough investigation of wear-resisting, hard-surfacing alloys. This investigation developed the fact that ditcher teeth coated with Haynes Stellite last four to five times as long as hardened steel teeth and average less than three times the cost. As a result, the Barber Greene Company has standardized on Haynes Stellited teeth, thus insuring the greatest possible durability and dependability of their ditching machines.

The wearing faces of ditcher teeth, and similar working parts operate under highly abrasive conditions. Resistance to wear is therefore an important property of such parts. Specify Haynes Stellite on your wearing surfaces. It resists abrasive wear better than any other hard facing alloy.

HAYNES STELLITE COMPANY

Unit of Union Carbide UCC *and Carbon Corporation*

DISTRICT SALES OFFICES

CHICAGO	Carbide and Carbon Building
DETROIT	4-240 General Motors Building
LOS ANGELES	1310 Santee Street
SAN FRANCISCO	114 Sansome Street
CLEVELAND	628 Keith Building
HOUSTON	6119 Harrisburg Boulevard
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TULSA	Exchange National Bank Building

General Offices—Kokomo, Indiana

Haynes Stellite welding rod is also available from any of the 28 District Sales Offices of Oxweld Acetylene Company

HAYNES STELLITE · HAYSTELLITE
HASCROME · HASTELLOY

Quality Products · Fair Prices · Engineering Service · Dependable Supply

HAYSTELLITE

McPherson O. & G. Co.'s No. 1 Fisk, SW NE NE Sec. 16-21-2w ..... Drlg. 3,547 ft.
McPherson O. & G. Co.'s No. 1 Sorenson, C SE Sec. 23-16-2w ..... Drlg. 3,475 ft.
Milmac's No. 1 Decker, NW cor. Sec. 11-20-3w ..... Fishing 1,500 ft.
Perry et al's No. 1 Wade, C SE Sec. 20-19-4w ..... Total depth 3,917 ft.; abandoned.
Transcontinental Oil Co.'s No. 1 Algers, NE SW Sec. 1-19-5w ..... Drlg. 3,916 ft.

MORTON COUNTY

Mangle et al's No. 1 Youngren, C SE NW Sec. 24-32-42.. Spudded; shut down.

MORRIS COUNTY

Urschell et al's No. 1 Scott, NE SW Sec. 6-16-6 ..... Drlg. 400 ft.
Arrow O. & G. Co.'s No. 1 Kinkle, C NW NE Sec. 8-16-7.. Total depth 1,470 ft.; abandoned. Rig.

NORTON COUNTY

Richards et al's No. 1 Colby, C SW Sec. 17-4-21w ..... Rig on ground.

OSBORNE COUNTY

Phillips Pet. Co.'s No. 1 Grieve, NW SE NE Sec. 6-7-12w.. Drlg. 3,925 ft.
Mid-Kansas' No. 1 Boyce, SE cor. NW Sec. 18-6-13w .... Drlg. 4,285 ft.

PAWNEE COUNTY

Prairie O. & G. Co.'s No. 1 Black, SW NE NE Sec. 11-20-18w ..... Drlg. 2,010 ft.

PRATT COUNTY

O'Haver & Jones' No. 1 Garacke, C NE SW Sec. 7-26-14w ..... Drlg 3,050 ft.
O'Haver & Jones' No. 1 Lunt, C SW NW Sec. 15-28-14w.. Shut down 4,743 ft.
Wilcox O. & G. Co.'s No. 1 Unknown, SW NW Sec. 7-26-15w ..... Fishing 1,360 ft.

RENO COUNTY

Empire O. & R. Co.'s No. 1 Blitz, NE NW Sec. 36-25-4w ..... Drlg. top chat 3,820 ft.
Wilcox O. & G. Co.'s No. 1 McPheeters, SW NW Sec. 22-26-8w ..... Drlg. 3,215 ft.
Witt's No. 1 Olsen, C SE NW Sec. 14-22-6w ..... Fishing 2,010 ft.
Skelly Oil Co.'s No. 1 Birkett, NE SW Sec. 30-24-7w .... Total depth 4,137 ft.; fishing.

RICE COUNTY

Tatlock et al's No. 1 Ploog, C SW SE, Sec. 33-18-9w .. Rig.
Boucher's No. 1 Bieg, Sec. 16-21-10w ..... Drlg. 1,900 ft.
Miller & Detrick's No. 1 Shumway, C SW Sec. 2-20-9w ... Drlg. 3,425 ft.
Burgher's No. 1 Fair, C SE NE NE Sec. 14-21-10w ... Shut down 1,700 ft.
Derby Oil Co.'s No. 1 Johnson, C NW NE SE Sec. 24-20-6w ..... Drlg. 2,410 ft.
Milmac's No. 1 Cain, C SE Sec. 29-19-7w ..... Shut down 3,700 ft.
Danciger et al's No. 1 Bell, C SW Sec. 16-19-8w ..... Drlg. 2,165 ft.
McCullough et al's No. 1 Williams, C NE Sec. 35-20-8w.. Rig.

RILEY COUNTY

Arkansas Fuel Oil Co.'s No. 1 Martin, SE NE SW Sec. 24-8-4 ..... Drlg. 2,570 ft.
Grey et al's No. 1 Smith, NE SE Sec. 30-6-6 ..... Shut down 1,970 ft.
Derby & Shaw's No. 1 Lindstrom, NE cor. Sec. 32-7-5e.. Shut down 2,246 ft.

RUSSELL COUNTY

Cress & Hacke's No. 1 Unknown, SE cor. Sec. 6-13-12w.. Rig on ground; abandoned.

ROOKS COUNTY

Central Commercial's No. 1 Baxa, Sec. 22-9-17w ..... Drlg. 3,310 ft.

RUSH COUNTY

Danciger Oil & Refining Co.'s No. 1 Nave, NW cor. 26-17-17w ..... Drlg. 2,170 ft.
Milmac's No. 1 Mohr, C NW Sec. 11-18-16w ..... Shut down 50 ft.
Danciger Oil Ref. Co.'s No. 1 Pivonka, NE cor. SW NE Sec. 17-19-17w ..... Fishing 4,145 ft.

SALINE COUNTY

Austin et al's No. 1 Olsen, NW SW SE Sec. 10-15-4w .... Drlg. 3,690 ft.
Templeman's No. 1 Lanbengager, C SW Sec. 20-15-5w .. Drlg. 3,590 ft.
Twin Mounds' No. 1 Weis, NW NE NW Sec. 20-13-4w.. Shut down 700 ft.

SEDGWICK COUNTY

Moore's No. 1 Stewart, C NE SE NW Sec. 18-28-1w .... Sand 3,675-82 ft.; hole full water; abandoned.
Tavender et al's No. 1 McLean, SE SW SE Sec. 23-26-1w ..... Rig.
Wilson et al's No. 1 Ottaway, SW NW Sec. 16-28-2w .... Rig; abandoned.
Marland and Amerada's No. 1 Sensorth, NW cor. Sec. 25-28-4w ..... Drlg. 4,000 ft.
McCullough Oil Co.'s No. 1 Buckles, NW cor. SE Sec. 3-28-1w ..... Fishing 1,115 ft.
LaFont et al's No. 1 Carlton, C SE SE SW Sec. 24-28-1e.. Shut down 1,385 ft.

SHAWNEE COUNTY

Jenkins & Scott's No. 1 Sherman, NW NE Sec. 28-10-15 ..... Drlg. 865 ft.
Jenkins & Scott's No. 1 Haden, NE SE Sec. 8-12-14 .... Shut down 750 ft.

SHERIDAN COUNTY

Mandalin O. & G. Co.'s No. 1 Unknown, C SE SW SW Sec. 27-7-26w ..... Spudded; shut down.

STAFFORD COUNTY

Gibson's No. 1 Mueller, C SW Sec. 11-23-14w ..... Underreaming 2,525 ft.

STEVENS COUNTY

Argus Gas Co.'s No. 1 Hobbe, C SE Sec. 17-32-37w ..... Shut down 520 ft.
McKenna's No. 1 Unknown, C NW NW Sec. 29-33-36w.. Shut down 2,760 ft.; 3,000,000 ft. gas.
Trees Oil Co.'s No. 1 Thompson, C NE SW Sec. 3-35-38w.. Drlg. 2,665 ft.
W. Sidwell et al's No. 1 Kelly, SW cor. NE Sec. 16-34-38w ..... Shut down 1,600 ft.

SMITH COUNTY

Phillips Pet.'s No. 1 Clydesdale, SE NW Sec. 23-5-14w.. Drlg. 3,790 ft.

SUMNER COUNTY

Hatfield's No. 1 Dauber, NE cor. Sec. 18-30-1w ..... Shut down 50 ft.
Kingwood Oil Co.'s No. 1 Stayton, C NE Sec. 18-31-2w.. Drlg. 3,412 ft.
Slick et al's No. 1 Peasel, NW cor. Sec. 33-31-1w ..... Chat 3,651-56 ft.; est. 250 bbls.
Lario O. & G. Co.'s No. 1 Osborne, NE SE Sec. 21-30-1w ..... Fishing 3,300 ft.
E. K. Carey & Larado Oil Co.'s No. 1 Welsch, SW SE Sec. 9-34-1e ..... Chat 3,625-40 ft.; dry; fishing 3,670 ft.
Shell Pet. Corp.'s No. 1 Armstrong, NE cor. Sec. 12-33-1e. Drlg. 3,810 ft.
Davidson et al's No. 1 Strickland, SW cor. SE Sec. 12-35-1w ..... Rig.

TREGO COUNTY

Dixie & Amerada's No. 1 Reitmayer, C NE NE Sec. 19-14-21w ..... Shut down 825 ft.
Prairie Oil & Gas Co.'s No. 1 Kutina, C NE SW NE Sec. 29-15-21w ..... Drlg. 3,525 ft.
Producers & Refiners Corp.'s No. 1 Kingsley, C SE NW NW Sec. 24-14-21w ..... Drlg. 3,495 ft.
Phillips Pet. Co.'s No. 1 Spitz, SE cor. Sec. 24-12-25w .. Drlg. 3,975 ft.
Day et al's No. 1 Gugler, SW NE NE Sec. 36-12-21w .... Shut down 50 ft.
Day et al's No. 1 Unknown, NE NW SW Sec. 2-11-21w .. Shut down 3,250 ft.

WASHINGTON COUNTY

McCool & Vincent's No. 1 Linn, NW cor. NE Sec. 27-4-3.. Shut down 3,100 ft.

WILDCAT OPERATIONS IN NEBRASKA

FRANKLIN COUNTY

U. R. Drlg. Co.'s No. 1 Brunkle (twin well), C NW SW NE Sec. 2-3n-13w ..... Rig.

CHASE COUNTY

Chase Pet. Co.'s No. 1 Ingold, C NE Sec. 24-6n-38w .... Shut down 4,200 ft.; will run 5-in. csg.

FURNAS COUNTY

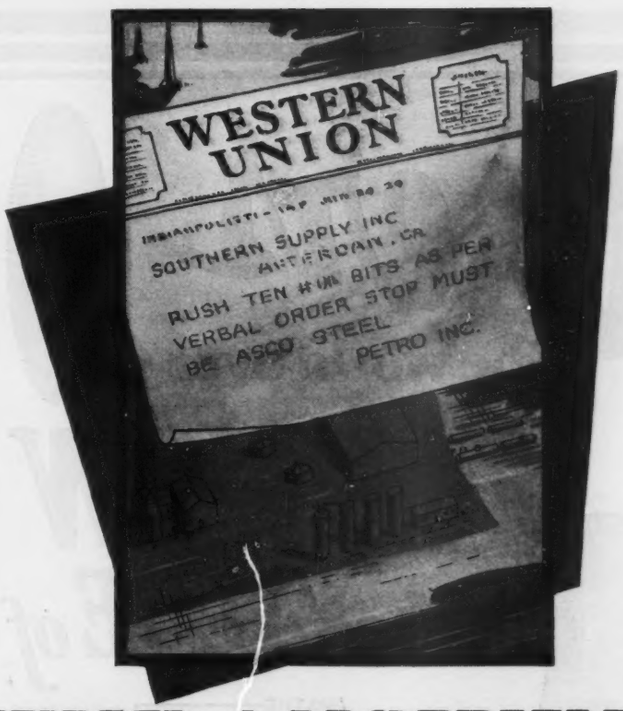
Southwestern Pet. Corp. of Nebraska's No. 1 Montague, SE SW SW Sec. 28-1n-22w ..... Shut down 1,750 ft.
Graham Bros.' No. 1 Edwards, NW SW Sec. 12-2n-22w.. Shut down 3,250 ft.

RICHARDSON COUNTY

Norton et al's No. 1 Hauser, NE cor. Sec. 26-1-14 ..... Location.

WEBSTER COUNTY

Mid-Kansas Exploration Co.'s No. 1 Platt, C SE one-half Sec. 3-1n-11w ..... Shut down 555 ft.



THE ANSWER
to the drillers' demands!

It is said an "Ideal" is never obtained—that it is something mythical—too perfect to be within reach of mankind.

Yet the drillers' ideal may be reached with a bit made from ASCO Well Bit Tool Steel—steel which causes the driller to cast aside worry about rock formations.

ASCO Well Bit Tool Steel is made to stand the gaff under the most severe strains, thereby giving the assurance of continuous drilling without fear of tool or labor loss.

When the going gets tough, try a bit made from ASCO Well Bit Tool Steel—watch the results—note the difference.

THE ANDREWS ASCO STEEL CO.
NEWPORT KENTUCKY

Users the world over — KNOW the VALUE of THE LAYNE

More Production
MILLED GROOVE SCREEN

Large and important oil companies abroad and in this country indorse the exclusive *Layne Milled Groove* screen.

They are users of this *greater production* screen and testify that it surpasses all production claims originally made by *Layne*.

The *Milled Groove* greatly enlarges the inlet area of the screen and production thereby is tremendously increased. Yet, the screen is not weakened either for tensile or collapsing strength.

Milled Groove is a tonic to low pressure wells, does not clog with mud or sand, and is the culmination of more than a quarter century's experience and development.

It is economy to install *Layne Milled Groove* now instead of later!

The Layne & Bowler Co.
Houston THE LAYNE Texas
Increases Production

The Layne New York Co. 30 Church St., New York
The Layne & Bowler Corp. Los Angeles, Cal.
Vickers, Limited London, England

LEADERSHIP IN SCREEN MANUFACTURE FOR MORE THAN A QUARTER CENTURY

U. S. OIL PRODUCTION IN 1929 ESTIMATED 1,004,800,000 BBLS.

By James McIntyre

It is safe to estimate that the production of crude oil in the United States this year will reach 1,004,800,000 bbls.

It would have been nearer 1,020,000,000 bbls. had it not been for the curtailment of unnecessary production in Oklahoma, Kansas and California in the latter months of the year. Following the example of West Texas operators in keeping excess production in the ground, Oklahoma, Kansas and California operators in flush fields curtailed sufficiently to keep supply and demand on an almost even keel and kept about 10,000,000 bbls. or more of oil in the ground to be drawn upon when needed.

The total production of the United States in October was 88,390,346 bbls., a daily average of 2,851,300 bbls. In November when the proration of fields like Oklahoma City, Earlsboro, Santa Fe Springs and others was in full effect production dropped in one week over 200,000 bbls. a day, the greatest single drop in history. As a result of proration, and notwithstanding the completion of a number of very large producing wells, production for the month, according to estimates, averaged 2,633,576 bbls. per day, a decline of 217,724 bbls. a day from the October average.

Following are the final figures on production of pools in Oklahoma, Kansas, Texas, Louisiana, Arkansas and the Rocky Mountain states and a summary of the production by states for October:

CRUDE OIL PRODUCTION IN THE UNITED STATES IN OCTOBER, 1929

SUMMARY BY PRODUCING DIVISIONS

Field—	Daily av. bbls.	Month bbls.
Oklahoma	671,666	20,821,646
California	867,586	26,895,150
Texas	852,004	26,412,167
Kansas	110,628	3,429,468
Arkansas	64,517	2,000,027
Louisiana	63,107	1,956,326
Montana	10,824	335,544
Wyoming	53,025	1,643,775
Colorado	5,418	167,958
New Mexico	7,925	245,675
Eastern Fields	144,600	4,482,600
Total October	2,851,300	88,390,346
Total September	2,916,647	87,498,886
Difference	65,347	891,460

MID-CONTINENT FIELD

	Daily av. bbls.	Month bbls.
Kansas	110,628	3,429,468
Oklahoma	671,666	20,821,646
North Texas	97,276	3,015,556
Central Texas	49,772	1,542,932
West Texas	362,763	11,245,661
Panhandle of Texas	104,598	3,242,538
East Central Texas	18,727	580,595
Arkansas	64,517	2,000,027
North Louisiana	39,507	1,224,717
Total October	1,519,454	47,103,140
Total September	1,592,390	47,771,717
Difference	72,936	668,577

GULF COAST SOUTHWEST TEXAS

	Daily av. bbls.	Month bbls.
Gulf Coast (Tex.-La.)	176,993	5,486,792
Southwest Texas	65,474	2,029,702
Total October	242,467	7,516,494
Total September	235,881	7,076,435
Difference	6,586	440,059

OKLAHOMA

Daily Average and Monthly Production in October

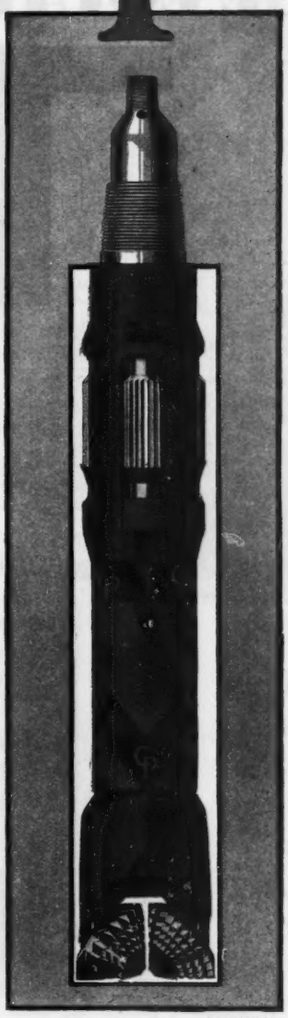
Washington County	5,218	161,758
Nowata County	5,163	160,053
Rogers County	2,396	74,276
Osage and eastern Kay Counties:		
Burbank	17,799	551,769
Osage, outside Burbank	24,241	751,471
Total	42,040	1,303,240
Tulsa and Wagoner Counties:		
Bird Creek, Owasso, etc.	3,493	108,283
Red Fork, Sand Springs, Turkey Mt., Bruner	1,165	36,115
Bixby, Leonard	869	26,939
Broken Arrow, Coweta	913	28,303
Total	6,440	199,640
Tulsa, Okmulgee and Muskogee Counties:		
Okmulgee and Beggs	2,797	86,707
Mounds	1,670	51,779
Bald Hill and Haskell	2,749	85,219
Morris, Boynton, Cole	2,006	62,186
Total	9,222	285,882
Okmulgee, Okfuskee, Seminole, Hughes and Pottawatomie Counties:		
Seminole City	29,992	929,752
East Seminole	6,146	190,526
Bowlegs	29,262	907,122
Little River	76,763	2,379,653
Earlsboro	68,903	2,135,993
Searight	11,427	354,237
Mission	19,556	606,236
Carr City	9,785	303,335
Maud	10,546	326,926
Total Seminole Field	262,380	8,133,780
Asher	6,410	198,710
Pearson-St. Louis	56,355	1,747,005
Sasakwa	12,020	372,620
Beebe	2,897	89,837
Henryetta, Deaner-Lyons, etc.	6,812	211,172
Wewoka	4,343	134,633
Cromwell	7,476	231,756
Papoose-Gilcrease	3,165	98,115
Jarvis-Holm	284	8,804
Weleetka	1,188	36,828
Wetumka	39	1,209
Yeager	438	13,578
Miscellaneous	1,001	31,031
Total	364,808	11,309,048
Creek and Tulsa Counties:		
Glen Pool, Jenks, Kiefer	6,730	208,630
Sapulpa and Fisher	595	18,445
Cushing-Shamrock	15,081	467,511
Bristow, Kellyville and Depew	15,105	468,255
Pickett Prairie and North Bristow	1,827	56,637
Eastern Bristow or Slick	5,706	176,886
Total	45,044	1,396,364
Pawnee County:		
Cleveland	2,701	83,731
Keystone	1,708	52,948
Jennings	3,357	104,067
Otoe	521	16,151
Ralston-Masham	156	4,836
Total	8,443	261,733
Payne County:		
Yale, Quay, and Ingalls	3,983	123,473
North Cushing	1,921	59,551
South Cushing	297	9,207
Mehan-Ripley	877	27,187
Total	7,078	219,418
Oklahoma County:		
Oklahoma City	45,853	1,421,443
Lincoln County:		
Stroud	932	28,892
Davenport	1,703	52,793
Kendrick	252	7,812
Total	2,887	89,497
Kay, Grant and Noble Counties:		
Blackwell	1,093	33,883
Vernon	933	28,923
Otstot	809	25,079
Deer Creek	905	28,055
Ponca City	623	19,313
Mervine	215	6,665
Braman	3,771	116,901
Hubbard	1,720	53,320
Thomas	566	17,546
Garrett	15	465
Tonkawa	8,662	268,522
Billings	146	4,526
Miscellaneous	831	25,761
Total	20,289	628,959
Garfield County:		
Garber	5,014	155,434
Logan County:		
Lovell	837	25,947
Marshall	15,728	487,568
Total	16,565	513,515
Carter County:		
Healdton	12,811	397,141
Hewitt	7,985	247,535
Graham	3,013	93,403
Brock	608	18,848
Fox	2,352	72,912
Sholom Alechem	13,987	433,597
Total	40,756	1,263,436
Stephens and Cotton Counties:		
Loco-Milroy	1,587	49,197
Comanche	1,208	37,448
Duncan	5,215	161,665
Walters	2,335	72,385
Kilgore	354	10,974
Total	10,699	331,669
Jefferson County—		
Hambro, etc.	1,989	61,659
Twp. 2s-6w	240	7,440
Total	2,229	69,099
Caddo County:		
Cement	1,475	45,725
Garvin County:		
Robberson	2,013	62,403
Grady County:		
Knox	3,528	109,368
Pontotoc County:		
Allen	24,235	751,285
Beckham County:		
Sayre	36	1,116
Marshall County:		
Madill	235	7,285
Total October	671,666	20,821,646
Total September	713,413	21,402,390
Difference	41,747	580,744

(Continued on Next Page)

With the NEW CP "Tucone" ROCK BIT

9 POINTS OF SUPERIORITY

1. SAFETY—Extra large drop-forged spindle bearings. No cone bushings. One-piece bit head. One-piece reamer body. FISHING ELIMINATED
2. CIRCULATION—Fluid stream jets directly on bottom of hole. No side-wall hydraulicking. STRAIGHT HOLE
3. CLEARANCE—Over 34% of hole area is clear. "Balling up" eliminated. STRAIGHT HOLE
4. CONES AND SPINDLE BEARINGS—Cones run on extra large replaceable drop-forged spindle bearings. Stronger and thicker cone wall section due to absence of bushing. GREATER STRENGTH
5. REAMERS—Three units, properly spaced and located for accurate reaming. New type reamer bearing eliminates wear on reamer body. KEEPS GAUGE—ALWAYS!
6. ONE-PIECE BODIES—Both bit and reamer bodies are solid manganese steel. GREATER STRENGTH
7. REPLACEMENTS—Cone-and-bearing units and reamers easily and quickly changed. TIME SAVED
8. LOW MAINTENANCE—Body repairs eliminated. No wear on bit head or reamer body. MONEY SAVED
9. CONE SERVICE—New CP "Red Head" cutting cones can be refitted on your used bearings (only at authorized CP Service Stations) and guaranteed by CP to be as good as if a new bearing were used—at a great saving to you! ECONOMY



(PATENTED)

CONE SERVICE!

New CP "Red Head" Cutting Cones can be re-fitted on your used bearings (only at authorized CP Service Stations) and are guaranteed by CP to be as good as if a new bearing were used at a great saving to you!

ECONOMY!

WHEN a CP "Red Head" Cutting Cone wears down, it can be sent with its bearing to a local, licensed CP Service Station where the cone will be stripped from its bearing and a new, factory-made cone will be re-fitted on the same bearing. The complete assembly will be sent back to you, ready for service, and THE COST WILL BE MUCH LESS THAN FOR A COMPLETE NEW ASSEMBLY! We guarantee that such replacement can be made on original bearing at least once and that the assembly will be as good as if a new bearing were used! You can identify a new, genuine, factory-made, guaranteed CP Cutting Cone by its "red head"!

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: Chicago Pneumatic Bldg., 6 East 44th St., New York

OIL TOOL DIVISION OFFICES:

OKLAHOMA CITY, OKLA.

655 Santa Fe Ave., LOS ANGELES, CAL.

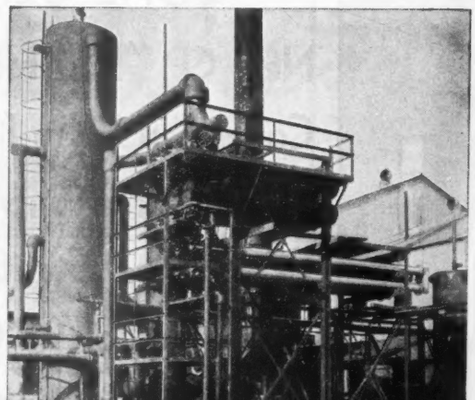
KEEPS GAUGE ...ALWAYS! OT-19

That the use of CP "Tucone" Rock Bits will unquestionably result in lower drilling costs, we are ready and willing to prove in any way YOU say! An inquiry to any of the above addresses will receive immediate attention.

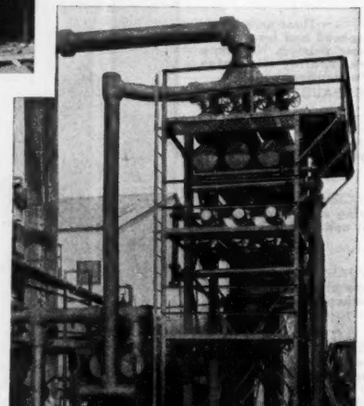
GASOLINE PLANT AND

REFINERY

HEAT EXCHANGE EQUIPMENT



TULSA TYPE



WE are equipped to build Tulsa Type Exchangers, Condensers and Coolers in any size or capacity from stock materials using either Seamless Steel, Aluminum or Admiralty Metal tubes. Large variety of sizes carried for immediate shipment.

TULSA

Boiler & Machinery Co.

TULSA OKLAHOMA

NATURAL GASOLINE PLANTS—TANKS—REFINING EQUIPMENT

KANSAS
Daily Average and Monthly Production in October

	Daily av. bbls.	Month bbls.
Marion County:		
Florence-Urschell	597	18,507
Peabody	1,166	36,146
Covert-Sellers	497	15,407
Lost Springs	682	21,142
Davis	1,002	31,062
Total	3,944	122,264
Butler County:		
Elbing	2,033	63,023
Potwin	386	11,966
Cameron-Robinson	930	28,830
Wilson-Dunkle	1,343	41,653
Towanda	1,930	59,830
Fox-Bush	956	29,636
Nutter-Koogler	1,663	51,553
Eldorado	7,350	227,850
Smock	231	7,161
Leon-Weaver	5,251	162,781
North Augusta	859	26,629
South Augusta	1,224	37,944
Sluss	248	7,688
Douglass	108	3,348
Keighly	603	18,693
Benton	110	3,410
Blankenship	678	21,018
Total	25,903	802,993
Greenwood and Woodson Counties:		
Sallyards	1,150	35,650
Teier-Pixley-Scott	4,588	142,228
Virgil	5,701	176,731
Thrall-Burkett	1,237	38,347
Seeley	8,013	248,403
Polhamus	818	25,358
Miscellaneous	914	28,334
Total	22,421	695,051
Cowley County:		
Rainbow Bend	1,382	42,842
Slick	546	16,926
Graham	271	8,401
Rock	161	4,991
Clark	143	4,433
Eastman	397	12,307
Winfield-New Salem	2,277	70,587
Miscellaneous	951	29,481
Total	6,128	189,968
Other counties:		
Sumner	11,588	359,228
Rooks	62	1,922
Rice	835	25,885
Russell	3,426	106,206
Reno	19	589
Sedgwick	23,345	723,695
McPherson	218	6,758
Trego	32	992
Harvey	20	620
Coffey	244	7,564
Chautauqua	3,076	95,356
Elk	1,611	49,941
Wilson	173	5,363
Montgomery	1,317	40,827
Allen	511	15,841
Neosho	501	15,531
Lyon	994	30,814
Miami	991	30,721
Franklin	352	10,912
Douglas	20	620
Bourbon	16	496
Linn	174	5,394
Anderson	1,762	54,622
Labette	20	620
Chase	14	434
Woodson	911	28,241
Total October	110,628	3,429,468
Total September	126,023	3,780,690
Difference	15,395	351,222

NORTH TEXAS
Daily Average and Monthly Production in October

Burkburnett	9,344	289,664
Electra	11,514	356,934
Iowa Park-K.M.A.	4,931	152,861
Archer County	18,802	582,862
Clay County	813	25,203
Wilbarger County	29,639	918,809
Montague County	6,395	198,245
Young County	6,935	214,985
Baylor County	80	2,480
Cook County	8,523	264,213
Foard County	221	6,851
Jackson County	79	2,449
Total October	97,276	3,015,556
Total September	98,909	2,967,270
Difference	1,633	48,286

EAST CENTRAL TEXAS
Daily Average and Monthly Production in October

Boggy Creek	3,268	101,308
Cedar Creek	87	2,690
Currie	488	15,141
Hill County	41	1,279
Mexia	5,111	158,434
Minerva	601	18,640
Nigger Creek	260	8,065
Powell	7,000	217,009
Richland	346	10,735
Thrall	34	1,059
Wortham	1,037	32,140
Van	434	14,095
Total October	18,727	580,595
Total September	18,300	549,000
Increase	427	31,595

CENTRAL TEXAS
Daily Average and Monthly Production in October

Coleman	6,307	195,517
Comanche	171	5,301
Stephens	5,912	183,272
Eastland	5,967	184,977
Brown	10,377	321,687
Callahan	3,760	116,560
Runnels	26	806
Throckmorton	667	20,677
Jack	3,648	113,088
Palo Pinto	540	16,740
Shackelford	9,446	292,826
Erath	257	7,967
Jones	2,583	80,073
Haskell	111	3,441
Total October	49,772	1,542,932
Total September	51,091	1,532,730
Difference	1,319	10,202

WEST TEXAS
Daily Average and Monthly Production in October

Bennett, Ward	147	4,561
Big Lake, Reagan	16,828	521,664
Settles, Chalk, etc., Glasscock and Howard	40,186	1,245,776
Church & Fields, Crane	22,606	700,775
Connell, Ector	.....	.....
Grand Falls, Ward County	15	457
Hendricks, Winkler	111,750	3,464,246
Ira, Scurry	25	775
McCamey-Taylor, Upton	9,257	286,978
McElroy, Crane	14,887	461,499
Pecos Valley, Pecos	122	3,759
Powell, Crockett	1,739	53,906
Penn, Ector	201	6,236
Stephens, Fisher	1,363	42,268
Skelly, Reagan	2,172	67,318
Waddell, Crane	40	1,243
Westbrook and Iatan, Mitchell	2,264	70,172
Wheat, Loving	867	26,885
Yates, Pecos	136,412	4,228,781
Yates, Crockett	305	9,456
Hazlett, Ward	538	16,678
O'Brien, Ward	1,039	32,198
Total October	362,763	11,245,661
Total September	366,485	10,994,567
Difference	3,722	251,094

ARKANSAS
Daily Average and Monthly Production in October

El Dorado	4,418	136,958
Smackover, light	5,798	179,738
Smackover, heavy	45,519	1,411,089
Stephens	996	30,876
Nevada County	1,035	32,085
Lisbon	1,182	36,642
Champagnolle	5,483	169,973
Bradley	86	2,666
Total October	64,517	2,000,027
Total September	65,324	1,959,720
Difference	807	40,307

TEXAS PANHANDLE
Daily Average and Monthly Production in October

Hutchinson	27,694	858,514
Carson	9,786	303,366
Gray	65,576	2,032,856
Moore	898	27,838
Potter	.....	.....
Wheeler	644	19,964
Total October	104,598	3,242,538
Total September	118,270	3,548,100
Difference	13,672	305,562

NORTH LOUISIANA
Daily Average and Monthly Production in October

Caddo, light	14,839	460,009
Caddo, heavy	3,118	96,658
Homer	3,793	117,583
Haynesville	3,811	118,141
De Soto-Red River	3,117	96,627
Elm Grove	535	15,585
Bellevue	651	20,181
Cotton Valley	2,502	77,562
Urania	5,715	177,165
Pleasant Hill	1,028	31,868
Sarepta-Cartersville	398	12,338
Total October	39,507	1,224,717
Total September	34,575	1,037,250
Difference	4,932	187,467

GULF COAST
Daily Average and Monthly Production in October

Texas

Allen	10	310
Barbers Hill	20,804	644,924
Batson	1,271	39,401
Big Creek	4,963	153,853
Blue Ridge	2,667	82,677
Brenham	236	7,316
Boling	1,400	43,400
Clay Creek	1,985	61,535
Damon Mound	495	15,345
De Walt	11,593	359,383
Fannette	2,562	79,422
Goose Creek	5,566	172,546
Hankamer	57	1,767
High Island	1,542	47,802
Hull	10,365	321,315
Humble	10,005	310,155
Jasper County	22	682
Lost Lake	699	21,669
Markham	371	11,501
Nash	499	15,469
North Dayton	445	13,795
Orange	2,805	86,924
Orchard	84	2,604
Pierce Junction	10,677	330,987
Port Neches	1,584	49,104
Raccoon Bend	8,496	263,376
Refugio	10,820	335,420
Saratoga	997	30,907
Sour Lake	2,698	83,638

(Continued on Next Page)

Tycos Back Pressure Regulators maintain a constant back pressure in residue gas lines at a natural gasoline plant.

Tycos Back Pressure Regulators (Pilot Operated)

THE *Tycos* Back Pressure Regulator successfully meets the demand for an instrument capable of giving close and consistent back pressure regulation, which the present highly developed and scientific practices of natural gasoline manufacturers demand.

It will maintain constant back pressures on gasoline plant absorbers, accumulator tanks, fractionators or stabilizers, surge tanks, stock vent tanks, re-run stills, residue gas lines, etc. Also on pressure distillate receivers, or gas separators of refinery cracking units.

Close regulation is assured by the high sensitivity of the regulator response and the throttling action of the control valve. With tendency toward the slightest pressure change in the process under control, the valve in the gas discharge line immediately throttles to such a position as is necessary to release the required amount of gas to give a consistently smooth and constant back pressure, as is evidenced in the even line on the recording pressure gauge chart.

Additional information on this installation furnished on request.

Taylor Instrument Companies
ROCHESTER, N. Y., U. S. A.
Canadian Plant, Tycos Bldg., Toronto
Manufacturing Distributors in Great Britain
Short & Mason, Ltd., London

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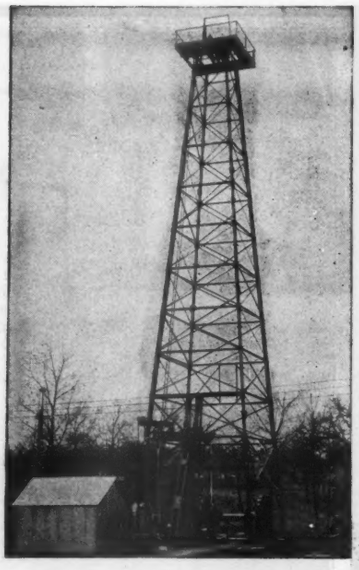
Temperature Instruments
Indicating Recording Controlling



REASONS Why Westinghouse Nuttall Gears Improve Electrical Pumping

No. 7

Quiet - clean - safe

BESIDES the many operating advantages which they give to electric pumping equipment, Westinghouse-Nuttall double reduction gears also effect marked improvements in working conditions.

Extreme accuracy of the gear teeth, anti-friction bearings for all shafts and the constant drenching with oil of all rotating parts by the positive lubricating system, combine to give smooth, vibrationless operation.

Also, having the lubrication entirely confined within the oil-tight case, promotes the cleanliness of equipment and immediate surroundings which many operators insist upon.

The all-metal construction of these units, in addition to providing ample strength to endure severe abuse in service, makes them practically indestructible by fire.

Increased safety of workmen also is provided because all moving parts, except the crank, are totally enclosed.

These are betterments in operating conditions which deserve more than passing consideration in the selection of economical pumping equipment.

Detailed information on Westinghouse-Nuttall oil well units may be obtained from any branch of the Oil Well Supply Company, located in all fields, or from any Westinghouse sales office.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
NUTTALL WORKS PITTSBURGH, PA.
SALES OFFICES AND SERVICE SHOPS IN ALL PRINCIPAL CITIES OF THE UNITED STATES
CANADIAN AGENTS: LYMAN TUBE & SUPPLY COMPANY

Westinghouse

T 30959-A

	Daily av. bbls.	Month bbls.
Liberty	6,715	208,165
Sheeks	363	11,253
Spindletop	23,925	741,675
West Columbia	6,673	206,863
Total October	153,393	4,755,183
Total September	141,553	4,246,607
Decrease	11,840	508,576

South Louisiana

Anse La Butte	46	1,420
Bayou Blue	50	1,561
Bayou Bouillon	131	4,053
Black Bayou	49	1,532
Dog Lake	19	606
Edgerly	670	20,768
Jennings	1,283	39,774
Hackberry	3,704	114,822
Lake Barre	769	23,851
Lake Pelto	207	6,418
Lockport	3,952	122,519
New Iberia	30	920
Port Barre	82	2,570
Sorrento	122	3,779
Starks	365	11,316
Sulphur	7,177	222,500
Sweet Lake	20	608
Vinton	4,513	139,896
Welsh	389	12,060
White Castle	21	636
Total October	23,600	731,609
Total September	22,700	681,000
Difference	1,100	50,609
Total Gulf Coast Oct.	176,993	5,486,792
Total Gulf Coast Sept.	164,233	4,927,607
Increase	760	559,085

SOUTHWEST TEXAS

Daily Average and Monthly Production in October

Branyon	28	854
Bruner	37,785	1,171,322
Dale	469	14,549
Darst Creek	2,031	62,963
Gonzales	7	228
Kingsville	527	16,332
Larremore	160	4,964
Luling	10,560	327,374
Lytton Springs	943	29,243
McMullen County	45	1,393
Medina County	22	681
Maverick County	3	90
Mirando	10,011	310,342
Somerset	1,767	54,762
Yoast	1,116	34,605
Total October	65,474	2,029,702
Total September	71,628	2,148,828
Decrease	5,156	119,126

WYOMING

Daily Average and Monthly Production in October

Big Muddy	2,044	63,364
Oregon Basin	3,660	113,460
Byron	.....	.....
Dutton	28	868
Elk Basin	719	22,289
Ferris	44	1,364
Grass Creek	2,024	62,744
Greybull	12	372
Hamilton	983	30,473
La Barge	2,332	72,292
Lance Creek	190	5,890
Lost Soldier	3,831	118,761
Mule Creek	587	18,197
Osage	592	18,352
Poison Spider	1,239	38,409
Rock Creek	2,218	68,758
Rex Lake	108	3,348
Lander	427	13,547
Salt Creek	31,911	989,241
Simpson Ridge	3	93
Frannie	23	713
Teapot	40	1,240
Total October	53,025	1,643,775
Total September	55,092	1,652,760
Difference	2,067	8,985

MONTANA

Daily Average and Monthly Production in October

Cat Creek	1,258	38,998
Kevin-Sunburst	6,820	211,420
Pondera	2,671	82,801
Lake Basin	75	2,325
Total October	10,824	335,544
Total September	11,098	332,400
Difference	274	3,144

COLORADO

Daily Average and Monthly Production in October

Craig	1,233	38,223
Fort Collins	1,881	58,311
Florence	736	22,816
Iles	1,070	33,170
Tow Creek	373	11,563
Miscellaneous	125	3,875
Total October	5,418	167,958
Total September	6,116	183,480
Difference	698	15,522

NEW MEXICO

Daily Average and Monthly Production in October

Artesia	834	25,854
Cap Rock (Maljamar)	734	22,754
Lea and Eddy	4,123	127,813
Hog Back	411	12,741
Rattlesnake	1,710	53,010
Table Mesa	113	3,503
Total October	7,925	245,675
Total September	5,928	177,840
Difference	1,997	67,835

NEW LOCATIONS IN TEXAS PANHANDLE AND NORTH AND WEST TEXAS FIELDS

TEXAS PANHANDLE

For Week Ending December 18

Carson County

Ryan Consolidated Oil Co.'s No. 8 B. F. Block, 330 feet north and east of the SW cor. of the NE of Section 111, Block 4, I.&G.N.

Gray County

Stover and Shell Petroleum Corp.'s No. 1 G. H. Saunders, 990 feet south and 330 feet west of the NE cor. of the north 100 acres of the west 149 acres of Section 3, B.&B. The Texas Company's No. 20 G. H. Saunders, 2,694 feet north and 3,251 feet west of the SE cor. of Section 3, B.&B. Camel Oil Co.'s No. 2 W. W. Harrah-B, 330 feet south and west of the NE cor. of Section 150, Block 3, I.&G.N. The Texas Company's No. 1 J. M. Bell, 2,310 feet south and 2,640 feet east of the NW cor. of Section 183, Block B-2, H.&G.N.

Hutchinson County

Danciger Oil & Refining Co.'s No. 4 J. L. Moore, 330 feet north and east of the SW cor. of the W half of the SE of Section 125, Block 4, I.&G.N. Spurlock and others' No. 1 W. S. Christian, 440 feet south and 330 feet west of the NE cor. of the SE of the SE of Section 33, Block Y.

Childress County

Continental Oil Co. and Sun Oil Co.'s No. 1 T. L. Johnson, 660 feet south and west of the NE cor. of Section 580, Block H, W.&N.W.R.R.

NORTH CENTRAL AND WEST TEXAS

For Week Ending December 18

Archer County

Burns & Long's No. 8 J. H. Turbeville, 1,170 feet north and 450 feet east of the SW cor. of Section 152, R. Carson Survey. Cullum and others' J. T. Richardson, 150 feet north and east of the SW cor. of the N half of Lot 15, J. Scott Survey A-374. Douglas Oil Co. and others' No. 1 J. S. Dunnam, 450 feet south and 150 feet east of the NW cor. of the east 30 acres of the J. S. Dunnam 160 acres of Section 2,436, T.E.&L. T. F. Hunter's No. 1 A. H. J. Kunkel, 450 feet north and 150 feet west of the SE cor. of the A. H. J. Kunkel tract out of the J. Standerford Survey A-394. Ramming & Wilson's No. 1 J. T. Richardson, 150 feet south and west of the NE cor. of Lot 12, J. Scott Survey A-374. Stump & Co.'s No. 2 H. L. and J. F. Ward, 2,850 feet north and 1,750 feet west of the SE cor. of the Joseph Tomlinson Survey A-452.

Baylor County

Consolidated Oil Co. and others' No. 5 W. H. Portwood, 525 feet south and 150 feet east of the NW cor. of the SW of Section 1,281, T.E.&L. Same company's No. 6 W. H. Portwood, 150 feet north and 450 feet west of the SE cor. of the SW of Section 1,281, T.E.&L. C. G. Hurt and others' No. 1 J. W. Stevens, 150 feet south and 1,164 feet east of the NW cor. of the W. Tryndale Survey A-302.

Brown County

Arcadia Refining Co.'s No. 1 H. M. Trueheart, 450 feet south and 150 feet east of the NW cor. of the south 80 acres of the east 160 acres of the M. B. Lamar Survey No. 638. Donley & Duffy's No. 1 L. A. George, 1,456 feet north and 925 feet west of the SE cor. of Section 42, H.T.&B. A. B. Gordon and others' No. 6 S. B. Cannon-A, 150 feet north and 1,050 feet west of the SE cor. of their 40-acre lease out of the W. Ahrenbeck

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& Brothers Survey No. 3, A-20. McGahey and others' No. 1 I. C. Mullins, 125 feet west of the NW cor. of the N. E. Munselle 120-acre tract out of the W. Ahrenbeck & Brothers Survey No. 3, A-20, and located in the J. C. Mullins Survey. McGahey and others' No. 2 I. C. Mullins, 150 feet north and 125 feet west of the SW cor. of the W. Ahrenbeck & Brothers Survey No. 3-A20 and located in the J. C. Mullins Survey. S. B. Owens, Inc., No. 2 J. E. Whiteside, 650 feet south and 720 feet east of the NW cor. of the J. E. Whiteside 238-acre tract out of the C. B. Bannister Survey No. 627. E. L. Smith Oil Co.'s No. 14 L. A. George, 900 feet north and 550 feet east of the SW cor. of the L. A. George tract out of Section 42, H.T.&B. The Texas Company's No. 6 W. S. Johnson, 1,000 feet north and 150 feet west of the SE cor. of the M. B. Nix Survey A-1,894. J. Warren's No. 4 H. M. Trueheart, 450 feet north and east of the SW cor. of his 40-acre lease out of the M. B. Lamar Survey No. 638. Young Brothers-Alexander & Woodley Petroleum Co.'s No. 24 R. Hickman, 450 feet north and 150 feet east of the SW cor. of their 100-acre lease out of the J. McGloin Survey No. 801, A-668. M. T. Anderson and others' No. 1 M. C. Fuller, 200 feet north and east of the most westerly SW cor. of the M. C. Fuller 428-acre tract out of the C. B. Jennings Survey No. 353, A-556. Paramount Oil Royalties' No. 1 R. L. Brooks, 3,000 feet north and 900 feet west of the SE cor. of the J. Hernandez Survey No. 350, A-406.

Callahan County

Campbell Oil Corp.'s No. 1 M. Alexander, 150 feet south and 450 feet east of the NW cor. of the NE of the SW of Section 117, B.B.B.&C. Same company's No. 1 J. B. Cutbirth, 150 feet south and west of the NE cor. of the NW of the SW of the B. Garcia Survey No. 204. J. H. Kliner and others' No. 1 N. Miller, 175 feet south and 2,500 feet west of the NE cor. of the S half of Section 143, G.H.&H. Mook-Texas Oil Co.'s No. 1 M. Harris, 150 feet north and east of the SW cor. of the SE of the SE of Section 112, B.B.B.&C.

Coleman County

Roth & Faurot's No. 5 J. E. and T. L. Stevens, 160 feet south and east of the NW cor. of Lot 5, Coleman County School Land No. 57. L. Smith's No. 10 J. P. Morris, 126 feet south and 2,970 feet west of the NE cor. of the J. H. Wood Survey No. 483. Homokla Oil Co.'s No. 1 S. Hutchings, 330 feet south and east of the NW cor. of Section 59, Block 1, G.H.&N. Kidney-Kamon and Western Exploration Co.'s No. 2 J. Pfluger, 150 feet south and 590 feet east of the NW cor. of the W. Spurlock Survey No. 280. Tidal Oil Co.'s No. 2 J. L. Stewardson, 545 feet north and 150 feet west of the SE cor. of Section 91, E.T.R.R.

Cooke County

Seitz-Comegys & Seitz's No. 1 F. L. McCollom, 3,530 feet north and 150 feet east of the SW cor. of the F. L. McCollum 413.75-acre tract out of the M.E. P.&P. Survey A-988, being 150 feet north and east of the SW cor. of their 127-acre lease.

Crane County

Church & Fields' No. 6 University Land (Dewell), 2,310 feet north and 330 feet east of the SW cor. of Section 39, Block 30, University Land. M. P. Co. & Hardwick's No. 18 University Land, 2,310 feet south and 330 feet east of the NW cor. of Section 39, Block 30, University Land.

Ector County

Llano Oil Co.'s No. 1 Midland National Bank, 330 feet south and east of the NW cor. of Section 18, Block 44, Township 3s, T.&P.

Eastland County

Hoffman & Page's No. 6 J. V. Harbin, 150 feet north and 160 feet east of the SW cor. of the J. V. Harbin 81.5-acre tract out of Section 27, Block 2, H.&T.C. Morris Brothers and others' No. 1 L. Williams, 300 feet north and 450 feet east of the SW cor. of the L. Williams 80-acre tract out of the W. Frells Survey. Anna Belle Oil Co.'s No. 1 E. M. Paschal, 1,200 feet north and 1,737 feet east of the SW cor. of Section 80, Block 4, H.&T.C., being 550 feet north and 594 feet east of the SW cor. of the E. M. Paschal 24.6-acre tract.

Garza County

Pandem Oil Corp.'s No. 1 J. D. Justice, 330 feet north and east of the SW cor. of Section 12, Block 6, H.&G.N.

Howard County

The California Co.'s No. 10 D. Roberts, Lease 2, 330 feet south and west of the NE cor. of Section 156, Block 29, W.& N.W.R.R. Moody Oil Corp.'s No. 21 D. Roberts-E, 2,310 feet south and 1,600 feet west of the NE cor. of Section 136, Block 29, W.&N.W.R.R. Ward Oil Co.'s No. 22 D. Roberts, 2,310 feet north and 1,650 feet east of the SW cor. of Section 137, Block 29, W.&N.W.R.R.

Montague County

Continental Oil and Bridwell Oil Co.'s No. 3 Mrs. L. Cunningham-C, 5,658 feet north and 1,433 feet west of the SE cor. of the T. R. Edmondson Survey A-222.

Palo Pinto County

White Oil & Gas Co.'s No. 1 W. P. Thompson, 150 feet north and 450 feet west of the SE cor. of the SE of the NE of the J. Roberts Survey A-382.

Pecos County

Geyer & Frates' No. 1 J. T. Sellman, 2,310 feet south and west of the NE cor. of Section 29, Block Z, T.C.R.R. Mid-Kansas Oil & Gas Co.'s No. 8 Mrs. M. A. Smith, 250 feet north and 1,005 feet west of the NE cor. of Section 21, Block 194, G.C.&S.F., and located in Section 31. Taylor-Link Oil Co.'s No. 12 University, 990 feet north and 330 feet east of the SW cor. of the SE of Section 13, Block 18, University Land.

Schleicher County

Delmar Oil Co.'s No. 1 Mrs. G. O'Harrow, 1,320 feet south and east of the NW cor. of Section 56, Block 1, G.H.& S.A.

Shackelford County

Cleveland Production Co.'s No. 1 R. Hastings, 150 feet east of the NE cor. of the R. A. Chadwick Survey No. 20 and located in the S. A. Swenson Survey No. 18. J. W. Ducker and others' No. 2 J. B. Matthews, 450 feet southeast of the northwest line and 1,070 feet southwest of the northeast line of Section 584, T.E. &L. Hart & Gist's No. 4 A. A. Clark, 1,030 feet south and 720 feet east of the NW cor. of the NE of Section 2, Blind Asylum Land. M. L. Hays' No. 1 Z. W. Casey, 750 feet northwest of the southeast line and 1,450 feet northeast of the southwest line of Section 581, T.E.&L. Worth Petroleum Co.'s No. 1 A. A. Clark, 150 feet south and west of the NE cor. of the east 53 acres of the south 80 acres of the northwest of Section 2, Blind Asylum Land.

Throckmorton County

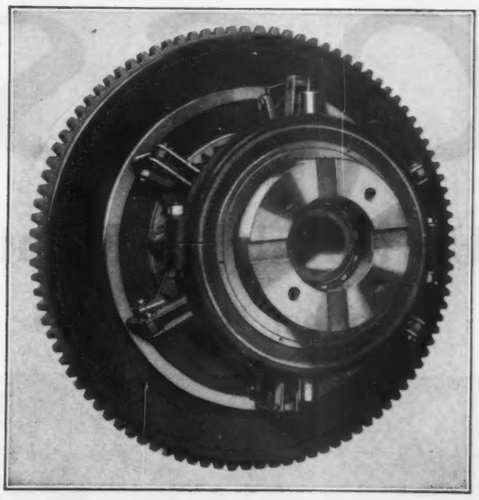
Cranfill & Reynolds' No. 4 R. P. Lee, 150 feet north and east of the SW cor. of the NW of Section 198, B.B.B.&C. Same company's No. 5 R. P. Lee, 150 feet south and east of the NW cor. of the NE of the SE of Section 198, B.B. B.&C. Same company's No. 6 Lee, 660 feet north and 150 feet west of the SE cor. of the SW of the NE of Section 198, B.B.B.&C. Shappell Oil Co.'s No. 6 Upshur County School Land, 450 feet south and 150 feet east of the NW cor. of Lot 27, Upshur County School Land, A-825. Shappell Oil Co.'s No. 7 Upshur County School Land, 200 feet south and 150 feet east of the NW cor. of Lot 27, Upshur County School Land, A-825.

Upton County

Pure Oil Co.'s No. 4 Ed S. Hughes Co., 330 feet south and 2,950 feet west of the NE cor. of their 300-acre lease out of the William Teer Survey No. 4, A-806, being 330 feet south and east of the SW cor. of the Snowden & McSweeney 80-acre lease.

Ward County

E. J. Anderson and others' No. 1 Grand Falls Townsite, 360 feet southwest of the northeast line and 160 feet southeast of the northwest line of Section 7, Block 32, H.&T.C. Fugler and others' No. 1 Grand Falls townsite, 185 feet southeast of the northwest line and 500 feet northeast of the northeast line of Section 7, Block 32, H.&T.C., and located in Section 11, Block 5, H.&T.C. Mid-Continent Petroleum Corp.'s No. 1 George H. Coates and others, 2,316 feet



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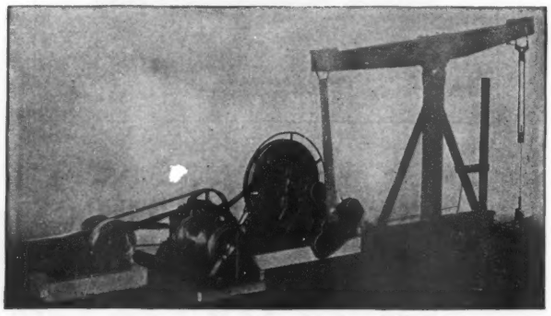

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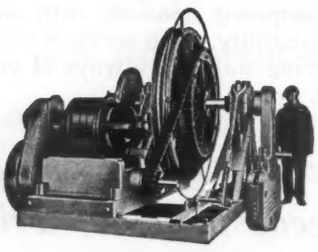

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Hillman Kelley, Inc., Los Angeles, California.

southwest of the northeast line and 922 feet northwest of the southeast line of Section 23, Block B-29, School Land.

Wichita County

J. O'Neil's No. 6 T. W. Roberts, 1,170 feet south and 750 feet east of the NW cor. of Section 16, H.T.&B., A-483.

Wilbarger County

Atlantic Oil Production Co.'s No. 7 W. T. Waggoner (Siegler), 210 feet south and 1,977 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Davis Oil Corp.'s No. 6 W. T. Waggoner, 824 feet south and 1,030 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Davis Oil Corp.'s No. 7 Waggoner, 487 feet south and 1,030 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Same corporation's No. 8 W. T. Waggoner, 150 feet south and 1,030 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Easter Oil Co.'s No. 1 W. T. Waggoner-F, 205 feet south and west of the NE cor. of the S half of the NW of Section 48, Block 2, H.&T.C. Fain-McGaha Oil Corp.'s No. 18 W. T. Waggoner-L, 1,975 feet north and 605 feet west of the SE cor. of their 200-acre lease "L" out of Section 31, Block 4, H.&T.C. Same corporation's No. 24 W. T. Waggoner-W, 150 feet north and west of the SE cor. of their lease "W" out of Section 32, Block 4, H.&T.C. Hi-Land Oil Co.'s No. 3 M. J. George, 450 feet south and 150 feet east of the NW cor. of the E half of the northeast 80 acres of the M. J. George tract out of Section 29, J. Poitevent Survey. Lido Oil Co.'s No. 3 Waggoner-C, 1,410 feet south and 1,977 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Lido Oil Co.'s No. 4 Waggoner-C, 510 feet north and 2,784 feet west of the SE cor. of Section 50, Block 2, H.&T.C. N. H. Martin and others' No. 2 M. J. George, 200 feet south and 467 feet west of the NE cor. of the south 30 acres of the west 60 acres of the northeast 80 acres of the M. J. George tract out of Section 29, J. Poitevent Survey, A-532. Staley-Wynne & Co.'s No. 8 Waggoner-B, 205 feet south and east of the NW cor. of the NW of the SE of Section 25, Block 4, H.&T.C. Same company's No. 18 Waggoner-G, 205 feet north and west of the SE cor. of the W half of the SE of Section 32, Block 4, H.&T.C. Same company's No. 5 Waggoner-S, 205 feet south and 660 feet west of the NE cor. of the SE of the SW of Section 25, Block 4, H.&T.C. The Texas Company's No. 371 Waggoner, 1,300 feet north and 1,200 feet east of the SW cor. of Section 39, Block 4, H.&T.C. Same company's No. 372 Waggoner, 655 feet north and 1,829 feet east of the SW cor. of Section 33, Block 4, H.&T.C. Waggoner Refining Co.'s No. 8 W. T. Waggoner-P, 824 feet south and 1,330 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Waggoner Refining Co.'s No. 9 Waggoner-P, 487 feet south and 1,330 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Same company's No. 10 Waggoner-P, 150 feet south and 1,330 feet west of the NE cor. of Section 35, Block 2, H.&T.C. Zenith Oil Co.'s No. 2 S. A. Dill and others, 150 feet north and west of the SE cor. of the SW of the SE of Section 82, Block 14, H.&T.C. Zenith Oil Co.'s No. 2 M. J. George, 266 feet south and 1,416 feet west of the NE cor. of the M. J. George tract out of Section 29, J. Poitevent Survey.

Young County

H. B. Alexander's No. 1 L. R. Drum, 150 feet south and west of the NE cor. of the L. R. Drum 80-acre tract out of the S. Tynes Survey, A-274.

R. E. Allday's No. 1 Petty & Miller, 150 feet south and east of the NW cor. of the west 40 acres of the south 100 acres of the Petty & Miller 262-acre tract out of Section 3,404, T.E.&L. M. A. Anderson's No. 1 J. L. Castleman, 150 feet south and west of the NE cor. of the SW of the north 160 acres of the east 200 acres of Section 72, T.E.&L. Beavers & Moran's No. 1 J. P. Mullinax, 150 feet north and east of the SW cor. of the north 30 acres of the west 70 acres of the J. P. Mullinax 121.9-acre tract out of Section 183, T.E.&L. Bollin & Lindsey's No. 1 D. D. Wolf, 150 feet south and east of the NW cor. of the D. L. Wolf 80-acre tract out of Section 165, T.E.&L. Bollin & Lindsey's No. 2 Wolf, 150 feet south and west of the NE cor. of Section 165, T.E.&L. Bridwell Oil Co.'s No. 6 F. M. Cullers, 450 feet south and east of the NW cor. of the S half of the SE of Section 2, C.T. R.R. Continental Oil Co. and Underwood's No. 4 R. Campbell, 150 feet north and 450 feet west of the SE cor. of the north 100 acres of the east 160 acres of Section 1,376, T.E.&L. N. D. Goldsmith's No. 1 R. E. Rogers, 450 feet south and 150 feet west of the NE cor. of Section 166, T.E.&L. Goldsmith & King Royalty Co.'s No. 8 H. O. Kunkel, 228 feet north and 150 feet east of the NW cor. of the E. Deitrich 145-acre tract out of the G. W. Stell Survey, A-256, and located on the H. O. Kunkel 252-acre tract. Same company's No. 9 Kunkel, 1,110 feet south and 450 feet east of the NW cor. of the S half of the west 80 acres of the H. O. Kunkel 252-acre tract out of the G. W. Stell Survey, A-256.

Jones & Sharp's No. 1 J. E. Smith, 150 feet south and west of the NE cor. of the S half of Section 71, T.E.&L. E. B. Lawson's No. 1 J. A. Leberman, 150 feet north and east of the SW cor. of the south 40 acres of Section 151, T.E.&L. E. B. Madden and others' No. 1 J. O. Winkler, 150 feet north and west of the SE cor. of the J. O. Winkler 232-acre tract out of the I. Holeman Survey, A-130. Perkins & Cullum's No. 4 E. Deitrich, 750 feet south and 150 feet east of the NW cor. of the E. Deitrich 145-acre tract out of the G. W. Stell Survey, A-256. Petroleum Production Co.'s No. 9 H. W. Hennig, 150 feet north and 450 feet east of the SW cor. of the north 40 acres of the west 110 acres of Section 410, T.E.&L. W. A. Scarborough's No. 1 N. Sewell, 150 feet south and west of the NE cor. of the SW of Section 1,589, T.E.&L. Stump & Heydrick's No. 1 J. B. Daniel, 150 feet north and west of the SE cor. of the south 40 acres of the E half of Section 164, T.E.& L. Sun Oil Co.'s No. 18 O. Deitrich, 150 feet north and west of the SE cor. of their 114-acre lease out of Section 4, B.B.B.&C., A-1,700. Sun Oil Co.'s No. 19 O. Deitrich, 942 feet north and 411 feet west of the SE cor. of their 114-acre lease out of Section 4, B.B.B.&C., A-1,700. Wise & Jackson's No. 6 F. M. Cullers, 450 feet north and east of the SW cor. of the NW of the SE of Section 2, C.T.R.R. Same company's No. 1 R. H. Miller, 1,300 feet south and 1,050 feet west of the NE cor. of Lot 5, Miller Subdivision, A. Rohus Survey, A-240. Wootten & Reed's No. 3 A. C. Casey, 150 feet south and east of the NW cor. of Section 1,486, T.E.&L. Wootten & Reed's No. 2 A. J. Fisher, 150 feet north and east of the SW cor. of the A. J. Fisher 160-acre tract out of the H. H. Lemmons Survey, A-1,477.

Christie Brothers' No. 1 J. Kisinger, 450 feet northwest of the northwest line of the W. J. Orrick Survey, A-217, and 3,125 feet southwest of the southwest line of Section 3, B.B.B.&C., A-27, and located in the John Conner Survey, A-56, being 165 feet south and east of the NW cor. of their 20-acre lease. J. C. Cunningham and others' No. 2 J. Kisinger, 700 feet northwest of the northwest line of the W. J. Orrick Survey, A-217, and 2,900 feet southwest of the southwest line of Section 3, B.B.B.&C., A-27, and located in the John Conner Survey, A-57, being 165 feet north and east of the SW cor. of their 40-acre lease. Flultz & Kay's No. 1 J. Kisinger, 1,600 feet northwest of the northwest line of the W. J. Orrick Survvey, A-217, and 2,550 feet southwest of the southwest line of Section 3, B.B.B.&C., A-27, and located in the John Conner Survey, A-57, being 165 feet south and west of the NE cor. of their 40-acre lease. T. G. Shaw and others' No. 2 M. K. Jarnigan, 400 feet northeast of the southwest line and 200 feet northwest of the southeast line of the M. K. Jarnigan 43-acre tract out of the John Conner Survey, A-57.

Corrections

Archer County—Apple & Brandeberry Oil Co. and Rocky River Oil Co.'s No. 6

New Year's Greeting

May this New Year bring you an overflowing fullness of Joy and a generous share of the Prosperity that seems to be in store for Oil Men everywhere.

Thus, The Oil and Gas Journal greets you at a time when it is doing something definite to help you enjoy the Happiness and Prosperity that it hopes will be yours throughout the New Year.

"The Annual Review Number," which will be issued this month, is one definite proof of The Oil and Gas Journal's desire to give you a wealth of information that will enable you to outline a safe, profitable program for this New Year.

"The Annual Review Number" will contain complete News, Oil Field Maps, well-logs, cross-sections, a history of all oil fields; a review of the Refining and Natural Gasoline Manufacturing Industries, Pipe Line News and Statistics; comparative price charts and tables; Engineering data, progress and accomplishments, and a collection of valuable facts not obtainable elsewhere.

The Oil and Gas Journal is proud of your friendship and patronage. In appreciation of your continued Good Will, our entire organization will keep on the alert, hoping to have the pleasure of helping you to make 1930 your biggest year in the Oil Business.

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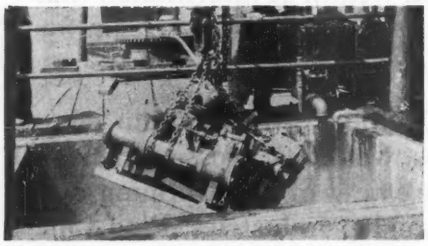

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Shackelford County—F. C. Morton's No. 1 L. G. Davis, 150 feet south and 150 feet east of the NW cor. of the S half of the NE of Section 39, Block 12, T.&P.

Wichita County—W. H. Hammon's No. 1 T. F. Mitchell-B, 190 feet south and 150 feet east of the NW cor. of Section 24, T. F. Mitchell Subdivision, P. Castleman Survey, A-36. Arkansas Fuel Oil Co.'s No. 36 Kemp & Kempner-B, 1,200 feet south and 150 feet east of the SE cor. of Block 81, Kemp Wichita Valley Land and located in Block 82.

Wheeler County—Burnett & Hoshor's No. 1 O. Hoshor, 330 feet south and east of the NW cor. of the SW of the SE of Section 63, Block 17, H.&G.N.

INTERNATIONAL'S OUTPUT IN COLOMBIA AND PERU

NEW YORK, Dec. 28.—International Petroleum Co. during the first 10 months of 1929 produced in Colombia and Peru a total of 26,033,366 bbls. of crude, compared with 24,332,760 bbls. in the corresponding months last year, an increase of 1,700,606 bbls.

Shipments by International from both countries during this period amounted to 19,380,651 bbls., an increase of 1,012,483 bbls. over shipments for the first 10 months of 1928.

Combined production in both countries for October was 2,793,677 bbls., an average of 90,118 bbls. per day, against 2,654,085 bbls., or 88,470 bbls. daily in the preceding month. October shipments were 1,903,240 bbls., against 1,836,331 bbls. in the preceding month.

The following table shows operations of the company in Peru and Colombia for the first 10 months of 1929, with comparisons for the corresponding months last year:

	Barrels of 42 U. S. gallons			
	Colombia		Peru	
	1929	1928	1929	1928
Producing wells completed	96	92	152	116
Initial yield	804	890	151	194
Total crude yield	16,979,353	16,548,928	9,054,013	7,783,832
Total crude shipments	15,136,565	14,994,210	4,244,086	3,373,949

AUSTRALIA OFFERING BONUS TO FIND OIL

Australia, a continent approximately the size of the United States, and ranking next to the United States and Canada in the per capita number of automobiles, lacks commercial petroleum deposits, so far as research has disclosed. The problem is regarded so seriously that the government of South Australia has offered a bonus of £5,000 (approximately $24,401) to the person who first produces 100,000 bbls. of oil there.

This information, contained in advices from the trade commissioner at Sydney, Charles F. Baldwin, was made public December 12 by the Department of Commerce. The statement follows:

Approximately $1,060,000 have been spent by the federal government of Australia in an effort to discover commercially important deposits of oil to make the commonwealth more self-sufficient in its petroleum requirements. Experimental drilling has been carried on in various parts of the country but apparently without success.

Nevertheless, the commonwealth geologist, Dr. W. G. Woolnough, in a recent report, voiced the opinion that "there seems to be a reasonable chance in spite of many disappointments and false trials that Australia may yet enter the ranks of oil-producing countries." He also stated that definite indications of petroliferous conditions obtained both in Queensland and western Australia, but is of the opinion that extravagant claims have been made concerning the possibility in western Victoria and South Australia.

Considerable money has been spent in exploration in South Australia and a state bonus of £5,000 awaits the discoverer who produces 100,000 bbls. of oil.

Other serious attempts to secure liquid combustibles include coal distillation and experiments with alcohol and blends of it as motor fuel. Assistant Trade Commissioner Lewis R. Miller reported recently that one of the members of the New South Wales coal commission stated that the whole question of the better utilization of coal and the possibility of making Australia self-sufficient in regard to motor spirit and residual oils will be investigated by the commission.

Australia, a continent of almost 3,000,000 square miles, having a population of a little over 6,000,000, or slightly exceeding two people per square mile, has more automobiles per capita than any other country in the world outside of the United States and Canada, and ranks fifth in total registrations.

On January 1, 1928, there were 464,225 automobiles, motor trucks, and buses registered, compared with 23,253,882 in the United States, 1,219,477 in Great Britain, 960,000 in France, 939,479 in Canada, and 422,300 in Germany.

The registration figure is impressive, considering that there is no production of Petroleum in Australia and that the nearest source of supply is approximately 3,900 miles from its populous area.

MEXICAN EAGLE COMPANY DEVELOPING TONALA

NEW YORK, Dec. 28.—Mexican Eagle Oil Co. has conducted a steady development program in the Tonala Field on the isthmus of Tehuantepec, the company's forthcoming annual report will show.

At the beginning of 1929, the report will disclose, the Mexican Eagle Oil Co. had two major producing fields on the Isthmus of Tehuantepec, viz., Filisola and Tonala. Up to that date, over 7,000,000 bbls. of oil had been extracted from the Filisola Field, and the daily production was then about 7,000 bbls During the course of the year, 14 more wells have been drilled, and the production has slowly declined to about 6,000 bbls.

The discovery well of Tonala Field was brought in in April, 1928, and a total of five wells had been drilled at the beginning of the year. Up to November, 1929, a further 26 wells have been completed, and the total daily production increased to 30,000 bbls.

Wildcat wells were drilled on Acalapa, San Jose del Carmen, Punta Gorda, Potrerillos, Santa Rosa, and Belem, without results, and further drilling operations on these properties were abandoned for the present, with the exception of Punta Gorda, where a further well is now being drilled. At Belem, well No. 5 encountered very high gas pressure, and a serious blowout was experienced. The well caught fire several times, and subsequently made large quantities of salt water. It was eventually brought under control, and plugging operations are now proceeding.

A further wildcat is at present being drilled at Pedregal, which is now at a depth of over 4,000 feet.

The Mexican Eagle Oil Co.'s total production on the Isthmus of Tehuantepec for the months January-October, 1929, was as follows:

	Bbls.
January	292,000
February	298,000
March	406,000
April	435,000
May	596,000
June	687,000
July	719,000
August	812,000
September	879,000
October	1,025,000

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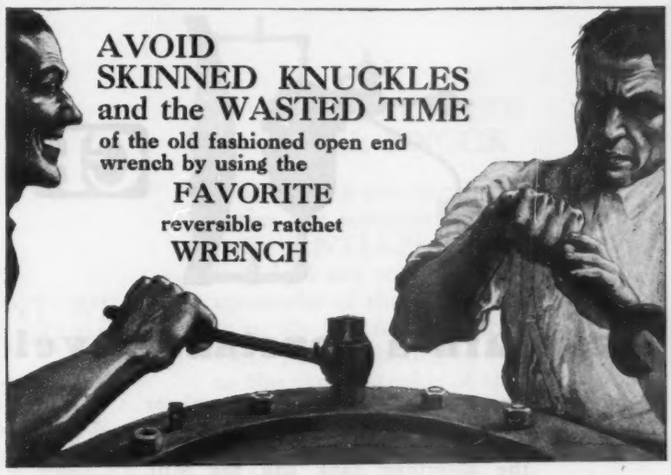

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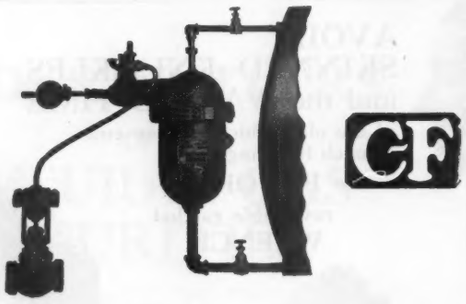

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TEXAS PAPER PAYS A TRIBUTE TO W. R. BOYD, NATIVE TEXAN

By Lorene Morrow*

It might be the table that the members of the peace conference sat about, one could easily think—this imposing table which asserts itself in the directors' room of the American Petroleum Institute in New York, past which the visitor must walk many steps as he is escorted to the private office of the executive vice president, William R. Boyd, Jr.

I must confess that one of the reasons I like to make an occasion of going to see Mr. Boyd is to enjoy the privilege of walking all those steps alongside just one table, whose shiny, dark top shows you at what gait and with what importance you entertain the privilege of passing by its majestic side.

But then the American Petroleum Institute, a large and important industrial organization, has 62 directors, which means that occasionally a large number of them must meet at times. Certainly the table should express its adequacy and it does. Decidedly so. Any table around which outstanding representatives of an $11,000,000,000 industry sit to formulate industrial policies has a right to formidable glorious security.

The pleasant feel of the deep carpet and the formal photographs of the former presidents of the Institute, true, make the room definitely a board of directors' meeting place but the portraits and the carpet and the chairs and the other decorations are of extrinsic value, for the table is there in all its sublimity.

Mr. Boyd's private office is just off the board room, and as one talks with him, if seated at just the proper strategic position, he can cast sidelong glances at the table. I learned this after a few surreptitious experimental squirms.

A Boy From Teague

These esoteric glances, mind you, while business is being discussed, but when Mr. Boyd settles himself back in his comfortable chair and tells yarns of his boyhood in Texas, one's attention is so concentrated on the sequences of adventures and experiences that he forgets the table for the time being.

William R. Boyd, Jr., was born in Fairfield, Freestone County, Texas, and there he grew to young manhood. His father, W. R. Boyd, Sr., practiced law in Fairfield for many years, later moving to Teague. He is now judge of the eighty-seventh district court and continues to live at Teague.

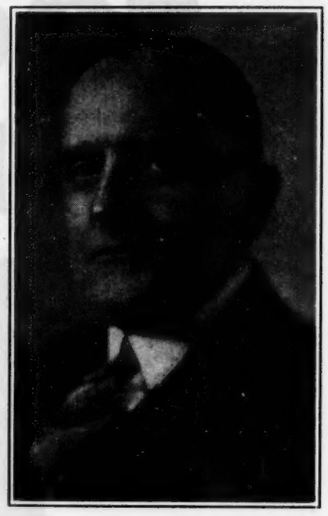
The junior Boyd studied law in his father's office and was admitted to the bar when he was but 19 years old. "I certainly had a trick played on me," Mr. Boyd says in his distinctive Texas accent, "when the time came for me to take the bar examination. Prior to that time the law was that the district judge appointed a committee of local lawyers to give the examination. The committee usually was friendly and sympathetic to the young law student and the examinations were oral and not too drastic. But just as I was ready to take my examination the Texas legislature changed the law and required written examinations before an examining board. I was scared to death—but I passed." Mr. Boyd has a happy, smiling face, and his eyes light up mischievously as he speaks.

Soon after his admittance to the bar Mr. Boyd accepted appointment and served for two years as secretary to Scott Field of Calvert, then the representative in Congress from the district now represented by Congressman Luther A. Johnson. Upon his return from Washington, the young lawyer married Gertrude Watson of Fairfield, daughter of W. S. Watson. They had one child, William R. Boyd, III., who attended Princeton University, but who is now married and is engaged in the oil business at Buffalo, N. Y. Mr. Boyd's immediate family still lives in and around Fairfield and Teague, the Watsons at Fairfield and the Boyds at Teague. He has a sister, Mary, and her husband, J. W. Carnes, who live in New York, where Mr. Carnes is vice president in charge of sales for Sinclair Refining Co.

First Mayor in Home Town

Mr. Boyd practiced law in Teague and always took an active part in civic activities, serving as Teague's first mayor. As a token of his interest in Teague civic affairs, several years ago he gave a silver loving cup to the city, which is awarded and presented each year to the citizen who has contributed the most worth while civic service.

For a time Mr. Boyd lived at Eddy, in McLennan County, where he organized and was president of the Farmers and Merchants State Bank. Leaving Eddy, he moved to Dallas, which he used as a base while engaged as a part of the national campaign, which resulted finally in the revision of the federal banking laws and the enactment of the present Federal Reserve banking system. Later Mr. Boyd entered the investment banking firm of Philp, Boyd & Co., composed of John W. Philp of Dallas, John H. Fahey of Boston and himself. Mr. Philp has but recently retired as postmaster at Dallas and is now the fourth assistant postmaster at Washington. Mr. Fahey was then the president of the United States Chamber of Commerce. He is now the owner and publisher of the Worcester (Mass.) Post.



W. R. Boyd, Jr.

Mr. Boyd's banking activities brought him in contact with many bankers and business men throughout the country and he came to New York as the national campaign manager for an organization known as the League to Enforce Peace. Ex-President William Howard Taft was its president. This league organized the country and conducted a nation-wide educational campaign favoring the creation of a league of nations following the war.

In 1920 Mr. Boyd became connected with the American Petroleum Institute, the national organization of men and companies engaged in the oil business. He knows and believes in his subject, and with phrases distinctly his own and typically Texas takes pains and pride in explaining the origin and method of operation of the Institute.

Mr. Boyd's work necessarily brings him in contact with hundreds of men in the oil industry. The membership of the Institute is approximately 4,000. One of the chief assets, or perhaps I might say the chief asset, Mr. Boyd possesses,

*From the Dallas Sunday News.

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is his ability to make friends and keep them. To most oil men he is Bill Boyd. He can name offhand and without reference to memoranda several thousand oil men and fit the name to the person instantaneously. One reason for this is that his work is his life. The work is not put on and off like Mr. Cratchit's office coat, with the hours of the usual working day.

Still a Country Boy

Another reason which may account for his ability to make so many friends is that chatty, informal way he has, easily explained, I think, by his Texas bringing up. "Of course, I like New York because of its opportunities. But what I miss most is the Texas kind of social life. I am still a country boy. I like a front porch to sit on. Then if I see a neighbor down the street with whom I wish to talk, I can stroll over to his fence and lean on it for a visit or sit with him on his gallery. Fences are mighty good supports when the affairs of the town or nation are being discussed," Mr. Boyd said, eyes twinkling.

"Of course it can't be helped because the city is so large. But I don't like the idea of living shelved away. Why, in the mornings I appear from the apartment house on Park avenue, where we live, pass hundreds of people on the street without recognizing a single face and disappear into the entrance of this building for all the world like a woodpecker. Everyone else must do the same. I always liken a city dwelling to woodpeckers darting in and out of their holes," he concluded.

As one leaves the office, Mr. Boyd shows the portraits of a half a dozen notables among the officers and directors of the Institute, two of them being Texans, Mr. Farish, president of the Humble Oil & Refining Co., and Mr. Pew, vice president of the Sun Oil Co., both past presidents.

The end of the visit is as efficacious as the beginning, for there is the mighty table which one must pass with the many steps, its polished wood reflecting the feeling of proudness surely all passersby have.

Either Mr. Boyd hasn't the same feeling for the table, or he suppresses the adorement, for he would be thinking up excuses to have meetings of directors, committees and subcommittees at least once a day so that he could preside before its greatness in all his glory.

OILS FOR PRESERVING CROSSTIES GAINS FAVOR

(Continued from Page 142)

periments were successful in the laboratory tests but that, in the commercial application, it was found that all types of wood did not respond equally to this treatment. Inasmuch as the wood preservative would have to work equally well on all types of material, the commercial use of the zinc chloride-petroleum mixture has not yet been recommended.

The quantity of paving oil used in the preservation of wood blocks has increased from 1,214,452 gallons in 1924 to 2,347,518 gallons in 1928, but the intervening years have shown considerable fluctuation. In 1925, the consumption was 2,080,287 gallons; in 1926, 2,541,563 gallons, and in 1927, 1,389,465 gallons. Paving oil is used by the industry only in the treatment of wood blocks for inside flooring and outside paving. Approximately 75 per cent of the wood blocks are treated with paving oil.

GOVERNMENT PLUGS WELLS

WASHINGTON, D. C., Dec. 30.—The Department of the Interior is planning to plug 62 wells that have been producing on the public domain and has already plugged eight wells that are capable of producing gas or oil. The total number of wells that have been capped on the public domain in the interest of conservation number 468. Of this number 230 are in California and 238 are in the public domain in other sections of the country.

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Contractors
Foremen
All Field Men

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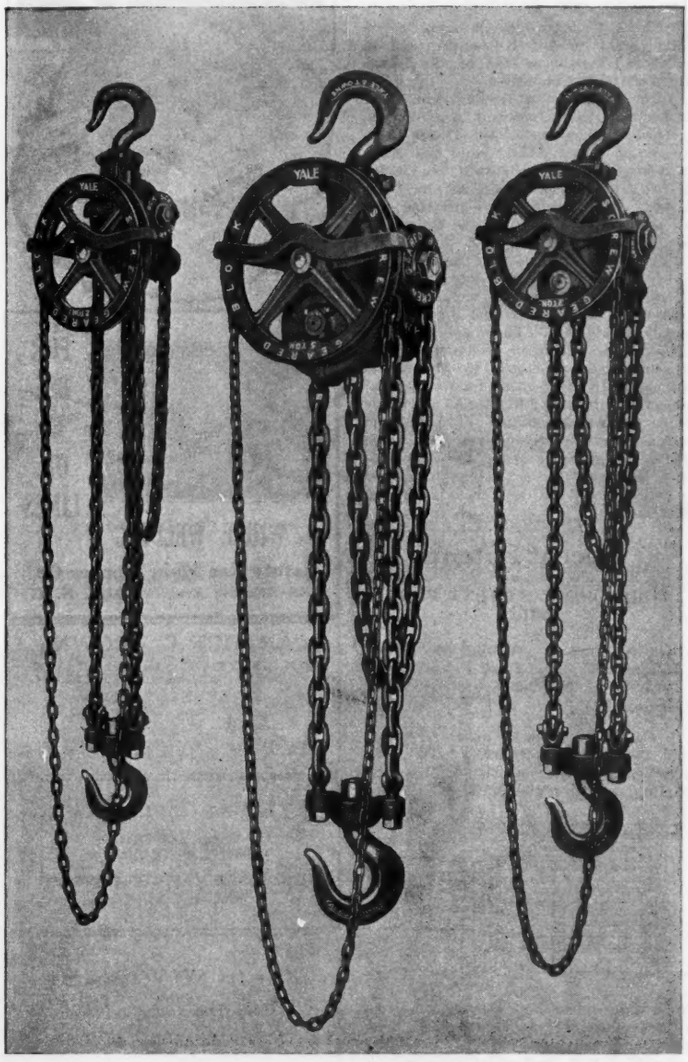

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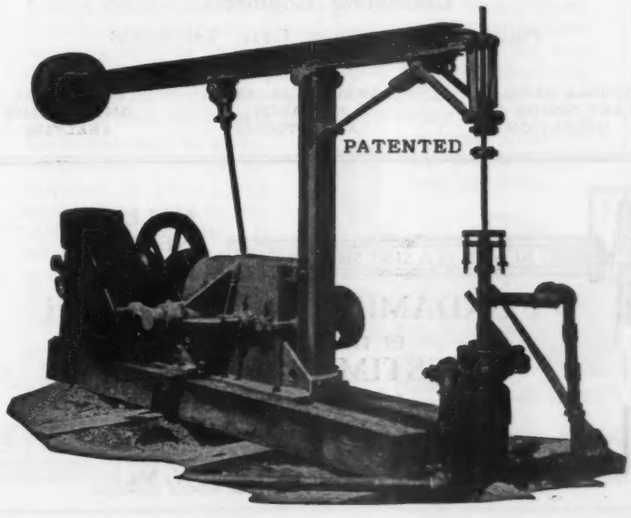

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By Charles E. Kern

Washington Bureau, The Oil and Gas Journal

WASHINGTON, D. C., Dec. 28.—"The need for the greatest practicable protection of Naval Petroleum Reserve No. 1 in California from drainage makes it necessary and desirable that legislation be enacted for this purpose at as early a date as possible," states Secretary of the Navy Charles Francis Adams in a letter transmitting a draft of a proposed bill which was introduced by Representative Britten (republican), of Chicago, chairman of the Committee on Naval Affairs.

The draft, Mr. Adams said, was submitted in place of the measure introduced in the Seventieth Congress, and on which hearings were held by the House Naval Affairs Committee.

As a result of these hearings, Mr. Adams said, an agreement was reached by the subcommittee of the House Committee on Naval Affairs and the Navy Department on a substitute bill which was referred to the Naval Affairs Committee. Due to press of legislation, the bill was not considered by the Seventieth Congress.

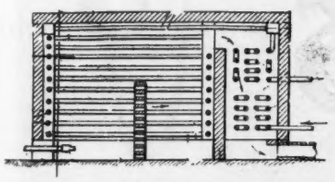
"The present bill," Mr. Adams said, "is drafted to cover not only the naval petroleum reserves but the naval oil shale reserves and any other fuel reserve that may be established. There has also been included the provision recommended by the committee appointed by the Secretary of the Navy to consider the general subject and remedial legislation advisable to cover the disposition of petroleum from the naval petroleum reserves. This additional provision aims to extend to naval fuel reserves the protection granted to public lands by the act of February 25, 1920."

Recent Patents

THREE-COMPARTMENT PIPE STILL

1,734,079. Heater. Walter M. Cross, Kansas City, Mo. Filed February 16, 1925. Serial No. 9,439. 9 Claims. (Cl. 196—116.)

6. In the process of heat treating a fluid medium in a tubular heater, the improvement which consists in heating the fluid in three stages, in the first of



which fluid containing tubes are subjected to the countercurrent heating effect of heating gases previously cooled in the two succeeding fluid heating stages, and in the second of which the fluid medium is heated by radiant heat absorbed from the combustion chamber of the furnace and the highly heated combustion gases, and in the third stage the fluid containing tubes are subjected to a parallel current heating effect by heating gases previously cooled in the second fluid heating stage.

MAKE SPECIAL WAX

1,735,555. Manufacture of a Ceresine-Like Wax. Gerald L. Wendt and Clifford Banta, Chicago, Ill., assignors to Standard Oil Co., Whiting, Ind., a Corporation of Indiana. Filed March 2, 1923. Serial No. 622,438. 6 Claims. (Cl. 196—19.)

1. The method of separating ceresine-like wax from substantially uncracked crude petroleum residuum, which comprises diluting the crude oil residuum with a mixture of a wax solvent liquid and a nonsolvent liquid miscible therewith, cooling the mixture to effect precipitation of the wax, and separating the precipitated wax.

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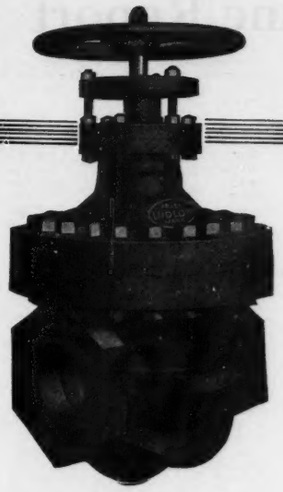

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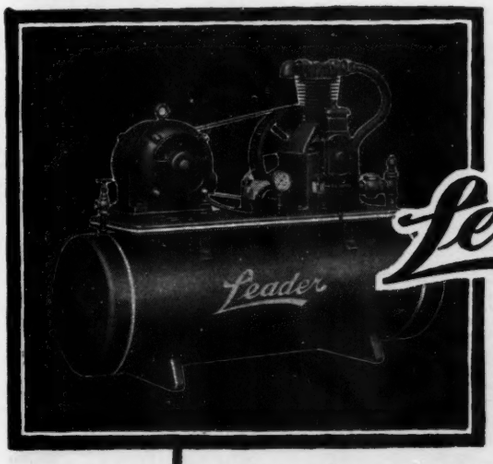

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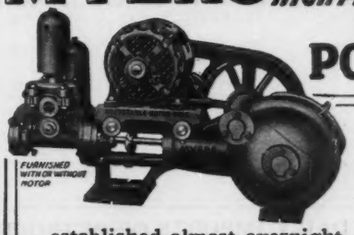

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS PIPE LINE STATEMENT FOR NOVEMBER, 1929

Runs

Company—	Month (bbls.)	Dy. av. (bbls.)
Prairie P. L. Co.*	4,620,000	154,000
Gulf P. L. Co.	1,748,975	58,299
Texas P. L. Co.	756,387	25,213
Magnolia P. L. Co.	1,630,495	54,350
Empire P. L. Co.	1,625,698	54,190
Cosden P. L. Co.	798,835	26,628
Sinclair P. L. Co.*	2,820,000	94,000
Oklahoma P. L. Co.	3,092,396	103,080
Other lines*	6,360,000	212,000
Total November	23,452,786	781,760
Total October	24,266,273	782,783
Difference	813,487	1,023

Shipments

Prairie P. L. Co.†	6,192,204	206,407
Gulf P. L. Co.	1,892,038	63,068
Texas P. L. Co.	1,277,071	42,569
Magnolia Pet. Co.	2,247,152	74,905
Empire P. L. Co.	1,441,860	48,062
Cosden P. L. Co.	859,728	28,657
Sinclair P. L. Co.†	3,458,090	115,270
Oklahoma P. L. Co.	3,228,946	107,632
Other lines*	6,210,000	207,000
Total November	26,807,089	893,570
Total October	27,633,003	891,388
Difference	825,914	2,182

Stocks

Prairie Oil & Gas Co.*	38,133,700
Gulf Pipe Line and Gypsy Oil Co.	10,057,895
The Texas Company	6,982,264
Magnolia Petroleum Co.	8,000,416
Empire Oil & Refining Co.	5,751,909
Mid-Continent Petroleum Corp.	3,600,903
Sinclair Crude Oil Pur. Co.	20,114,000
Oklahoma Pipe Line Co.	3,718,953
Carter Oil Co.	9,421,386
Other companies	25,574,000
Total November	131,355,426
Total October	133,042,778
Difference	1,687,352

*Estimated. †Prairie and Sinclair shipments include Texas oil.

EASTERN PIPE LINE REPORT FOR MONTH OF NOVEMBER

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct. '29	Nov. '29
Nat. Transit	404,122.07	426,302.38
S W Pa P L	94,485.54	82,952.71
Eureka P L	407,367.33	357,808.48
Buckeye P L (Macksburg)	368,647.98	334,853.69
Buckeye P L (Cleveland)	12,971.28	10,941.76
Buckeye P L (Lima, etc.)	111,929.62	94,141.89
Indiana P L	5,168.79	5,047.91
Cumberland P L	197,918.75	176,386.64
N Y Transit	32,746.64	31,674.21
Tide Water P L	.....	23,927.23
Pure Oil	290,221.77	296,627.99
Paragon Dev.	13,725.53	11,938.81
Stoll Oil Ref.	5,077.57	4,324.62
Bradford Trans.	414,513.56	387,990.83
Total	2,358,896.43	2,244,919.15
Daily average	76,093.43	74,830.64

Note—Paragon Refining Co. had other receipts of 193,678.88 bbls. Paragon Development had other receipts of 171.69 bbls.

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for October and November:

	Oct. '29	Nov. '29
Nat Transit	601,799.57	610,866.22
S W Pa P L	332,869.58	335,147.92
Eureka P L	228,566.66	241,823.95
Buckeye P L (Macksburg)	196,645.46	200,936.77
Buckeye P L (Cleveland)	2,185.51	1,694.86
Buckeye P L (Lima, etc.)	1,676,756.01	1,293,017.06
Indiana P L	1,425,999.12	1,380,193.50
Cumberland P L	178,996.97	185,762.53
Southern P L	64,066.81	63,391.67
N Y Transit	292,940.39	265,488.60
Northern P L	168,667.97	173,230.28
Tide Water P L	280,269.87	324,984.88
Pure Oil	290,992.65	307,123.47
Paragon Ref.	175,750.89	192,159.25
Paragon Dev.	15,869.35	12,438.47
Bradford Trans.	.....	494,038.59
Total	5,932,376.81	6,082,298.02
Daily avg.	191,366.99	202,743.27

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky at the close of October and November:

	Oct. '29	Nov. '29
Nat Transit	719,388.96	725,641.66
S W Pa P L	498,919.11	526,381.77
Eureka P L	1,398,117.80	1,397,286.60
Buckeye P L (Macksburg)	400,582.44	413,588.69
Buckeye P L (Cleveland)	48,885.71	74,272.48
Buckeye P L (Lima, etc.)	2,783,005.84	3,181,309.11
Indiana P L	747,719.04	716,629.97
Cumberland P L	562,259.60	552,617.51
Southern P L	339,742.96	308,184.02
N Y Transit	142,410.37	141,455.63
Northern P L	328,077.84	340,327.62
Tide Water P L	909,010.27	1,012,222.37
Pure Oil	20,118.60	20,999.86
Paragon Ref.	24,163.27	25,402.17
Indian Ref.	182,679.26	.....
Paragon Dev.	4,903.36	4,736.09
Tuscarora	265,678.11	267,510.68
Brad Trans.	65,438.84	159,975.37
Total	9,441,101.38	9,868,537.60
Decrease	1,965.57	.....
Increase	.....	427,436.22

Grades of Oil

The following table shows the amount of the different grades of oil held by the Eastern Pipe Lines at the close of October and November showing gross stocks of the above fields:

	Oct. '29	Nov. '29
Pennsylvania	3,372,038.77	3,270,041.21
Lima	563,216.33	567,411.45
Kentucky	711,464.81	607,043.92
Mid-Continent	4,494,311.77	4,283,691.69
Illinois	299,569.70	283,720.25
Total	9,441,101.38	9,011,908.52

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1926	1927	1928	1929
Jan.	55,630	56,209	52,904	51,749
Feb.	60,394	61,293	57,002	51,833
Mar.	61,644	63,247	57,485	54,252
April	63,019	60,927	56,812	58,444
May	60,580	60,284	62,067	59,802
June	61,121	62,757	58,230	58,833
July	63,206	58,674	57,144	66,087
Aug.	61,815	60,870	57,745	66,687
Sept.	64,639	60,285	53,487	67,315
Oct.	161,132	147,080	58,100	76,093
Nov.	67,774	57,275	53,865	74,831
Dec.	68,755	53,089	52,025	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1926	1927	1928	1929
Jan.	156,056	141,227	146,465	165,721
Feb.	159,488	138,534	167,368	159,387
Mar.	150,239	133,777	158,883	161,471
April	152,374	140,227	172,935	169,737
May	160,998	144,594	180,559	184,281
June	160,267	149,772	188,024	185,404
July	160,045	151,850	189,470	194,763
Aug.	151,929	188,653	192,853	184,946
Sept.	158,915	144,213	194,138	201,214
Oct.	161,132	147,036	176,000	191,367
Nov.	172,608	150,975	176,898	202,743
Dec.	136,428	144,504	173,572	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1927	1928	1929
Jan.	9,718,008	12,276,710	7,596,564
Feb.	10,119,162	12,180,419	8,738,835
Mar.	10,794,044	12,239,725	9,002,058
April	11,112,295	11,740,125	8,978,172
May	11,359,381	11,602,468	8,903,560
June	11,493,673	11,287,678	8,921,275
July	11,458,128	10,819,331	9,211,595
Aug.	11,989,115	10,236,743	9,440,643
Sept.	12,212,716	9,660,910	9,443,067
Oct.	12,047,661	9,229,709	9,441,101
Nov.	11,939,740	8,366,553	9,868,538
Dec.	12,340,297	7,539,555	.....

Franklin Pipe Co.

The following table exhibits the condition of the Franklin Pipe Line at the close of business for the months named and not counted in the stocks and average reported above:

	Runs	Shipments	Stocks
1928—			
Nov.	2,663.53	788.47	19,426.99
Dec.	3,053.60	3,167.53	19,426.99
1929—			
Jan.	2,099.90	.....	19,313.06
Feb.	2,469.47	6,873.20	17,009.23
March	3,330.82	3,595.01	16,745.04
April	4,864.07	4,243.59	17,365.52
May	2,688.59	2,455.54	17,598.57
July	2,947.62	3,329.36	4,503.48
Aug.	2,742.73	2,889.47	4,356.74
Sept.	2,925.71	2,897.34	4,385.11
Oct.	3,083.59	1,754.94	5,713.76

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, Dec. 1	2,408,755.23
Runs from wells	541,181.52
Other receipts	250,705.12
Regular deliveries	427,064.63
Other deliveries	402,397.36

The amount of Illinois oil run by the Tidewater Pipe Co. in November was 23,927.23 bbls. Deliveries were none. Adding these figures to those of the Illinois Pipe Line Co. makes the runs and deliveries as follows:

1928—	Runs	Deliveries
Dec.	584,633.00	491,517.26
1929—		
Jan.	570,727.38	545,084.66
Feb.	517,330.17	503,387.70
March	728,319.67	586,049.60
April	515,374.27	654,297.96
May	608,981.60	673,812.83
June	568,454.70	818,845.97
July	611,106.79	828,159.44
Aug.	625,351.99	746,425.06
Sept.	582,457.66	669,947.72
Oct.	622,302.83	558,558.68
Nov.	565,108.75	427,064.63

Tidewater Pipe Co., Ltd., also delivered in November, 72,323.52 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA OIL AT ATLANTIC AND GULF COAST PORTS

Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
February	14,214	.....	38,750	17,250	11,607	81,821	.....	.....	.....	.....	3,750	85,571
March	19,903	968	31,258	18,581	7,355	78,065	.....	.....	.....	.....	.....	78,065
April	16,667	.....	32,333	13,233	2,234	64,467	.....	.....	.....	.....	7,333	65,200
May	16,226	2,416	31,326	10,806	2,129	62,903	.....	.....	.....	.....	.....	62,903
June	14,866	3,167	23,100	10,300	6,100	57,533	.....	.....	.....	.....	.....	57,533
July	15,387	4,806	34,290	19,388	2,452	76,323	.....	.....	.....	.....	4,161	80,484
August	20,389	3,129	35,226	18,903	5,548	83,194	.....	.....	.....	.....	12,161	95,355
September	19,433	.....	31,834	11,900	6,200	69,367	.....	.....	.....	.....	4,800	74,167
October	9,065	4,677	42,065	12,000	9,677	77,484	.....	.....	.....	.....	4,097	81,581
November	18,900	3,167	41,667	14,699	3,767	82,200	.....	.....	.....	.....	2,400	84,600

AVERAGE DAILY IMPORTS OF PETROLEUM AT PRINCIPAL UNITED STATES PORTS

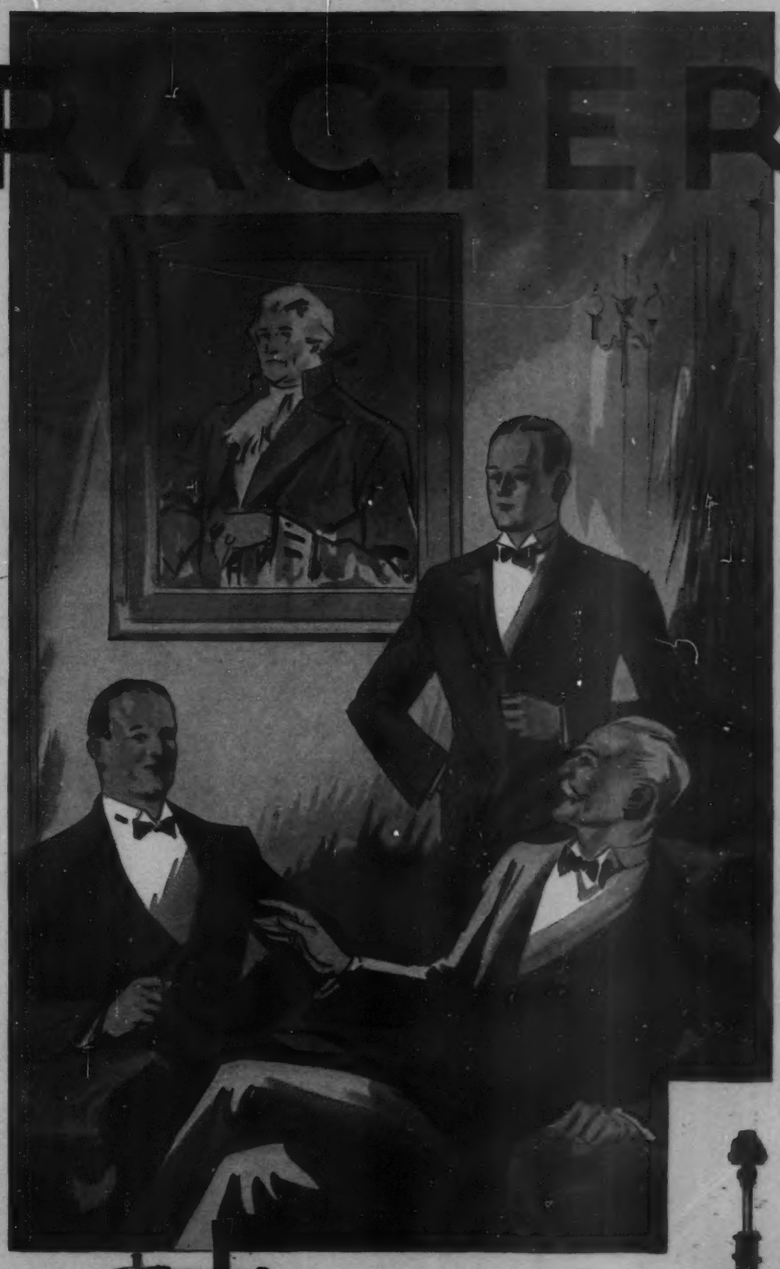
Average bbls. per day—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleans Baton Rouge	Port Arthur Sabine Pass	Tampa	Total	Total all ports
February	13,750	15,071	135,179	32,750	17,892	214,643	.....	34,357	821	143	35,321	249,964
March	18,548	26,064	145,516	39,162	28,162	257,452	.....	42,581	2,322	.....	44,903	302,355
April	19,733	18,367	137,233	50,267	22,567	248,167	6,867	25,066	10,367	1,500	43,800	291,967
May	29,806	19,258	138,000	49,936	22,322	259,322	6,677	26,323	3,000	1,323	37,323	296,645
June	31,433	8,667	134,600	42,967	18,300	235,967	8,600	22,633	11,800	2,033	45,066	281,033
July	40,097	15,129	111,677	43,420	31,516	241,839	4,774	12,097	9,516	161	26,548	268,387
August	33,387	14,355	162,644	30,936	20,355	261,677	4,226	12,742	.....	1,484	18,452	280,129
September	32,967	9,000	136,633	54,300	32,900	265,800	6,900	22,900	5,367	1,333	36,500	302,300
October	39,936	10,519	137,096	38,160	38,644	264,355	6,613	13,388	11,064	4,419	35,484	299,839
November	23,633	18,900	125,200	41,100	28,200	237,033	2,233	12,533	6,667	2,500	23,933	260,966

GROSS PRODUCTION IN THE UNITED STATES FOR 12 MONTHS (REVISED)

(In Barrels of 42 gallons)

1928-29		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
November:	Month	19,907,526	22,078,680	20,791,798	2,977,800	2,476,080	1,801,914	2,388,870	3,348,000	75,770,668
	Daily average	663,584	735,956	693,059	99,260	82,536	60,064	79,629	111,600	2,505,639
December:	Month	21,574,703	22,425,722	22,180,102	2,988,400	2,521,571	1,846,841	2,289,040	3,581,000	79,407,379
	Daily average	695,958	723,410	715,487	96,400	81,341	59,576	73,840	115,516	2,561,528
January:	Month	23,385,939	22,575,874	23,412,236	2,861,641	2,453,526	1,807,887	2,076,070	3,439,000	82,012,163
	Daily average	754,385	728,254	755,233	92,311	79,146	58,318	66,970	110,936	2,645,554
February:	Month	22,300,707	20,464,164	20,816,209	2,557,968	2,154,194	1,569,930	1,965,656	3,113,000	74,941,228
	Daily average	796,454	730,863	743,454	91,356	76,936	56,068	70,202	111,184	2,676,472
March:	Month	24,324,729	20,838,262	24,358,592	2,951,076	2,303,724	1,756,153	2,195,823	3,586,000	82,314,359
	Daily average	784,669	672,202	785,761	95,196	74,314	56,650	70,838	115,677	2,655,302
April:	Month	23,295,060	20,235,290	23,493,097	3,112,740	2,188,680	1,702,479	2,085,030	3,524,000	79,636,376
	Daily average	776,502	674,513	783,102	103,758	72,956	56,750	69,501	117,467	2,654,546
May:	Month	24,053,351	21,345,453	24,489,101	3,665,099	2,200,158	1,713,261	2,252,522	3,879,000	83,617,945
	Daily average	775,915	688,563	789,965	118,229	71,618	55,267	72,662	125,129	2,697,353
June:	Month	24,624,627	20,561,112	24,698,029	3,636,150	2,112,270	1,699,581	2,180,752	3,887,000	83,399,521
	Daily average	820,821	685,371	823,267	121,205	70,337	56,653	72,692	129,567	2,779,984
July:	Month	26,796,627	22,371,925	26,969,389	3,867,157	2,137,047	1,716,488	2,360,836	4,439,200	90,659,730
	Daily average	864,407	721,675	869,997	124,747	68,937	55,370	76,156	143,200	2,924,489
August:	Month	27,233,353	22,429,492	27,490,489	3,816,555	2,086,083	1,764,973	2,478,016	4,340,000	91,638,961
	Daily average	878,495	723,532	886,787	123,115	67,293	56,934	79,936	140,000	2,956,092
September:	Month	26,104,264	21,402,390	25,987,102	3,780,690	1,959,720	1,718,250	2,346,480	4,200,000	87,498,896
	Daily average	870,142	718,413	866,236	126,023	65,324	57,275	78,234	140,000	2,916,647
October:	Month	26,895,160	20,821,646	26,412,167	3,429,468	2,000,027	1,956,326	2,392,952	4,482,600	88,390,346
	Daily average	867,586	671,666	852,004	110,628	64,517	63,107	77,192	144,000	2,851,300
	Total 12 months	290,496,046	257,550,010	291,098,901	39,644,744	26,613,080	21,054,083	27,012,047	45,818,600	999,287,511

CHARACTER runs in the family



Because of their famous forbears, much is expected of the present generation of Gaso Oil Industry Pumps. But staunch character runs in the Gaso family. From the smallest to the largest, these pumps can be depended upon to acquit themselves well in humdrum daily service or in times of extraordinary demands.

In the Gaso pump family there is a member fitted for every type of pumping duty in the oil industry. Send your requirements for detailed information.

GASO PUMP & BURNER MFG. COMPANY

Tulsa, Oklahoma

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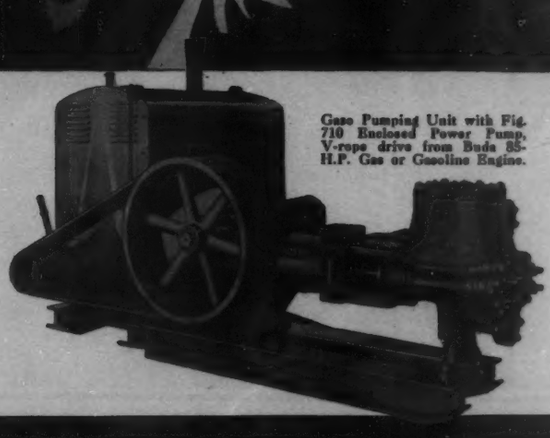
535 Fifth Avenue New York, N. Y.

Gaso Piston Power Pump (Jerker Pattern) Figure 301



Gaso Pumping Unit with Fig. 710 Enclosed Power Pump, V-rope drive from Buda 85-H.P. Gas or Gasoline Engine.

Gaso Walking Beam Pump Fig. 604, for Gas or Vacuum.

Gaso Fig. 1508 All Timken Bearing Duplex Power Pump.

GASO PUMPS

for every oil industry need

"Super 2" Fuel Economy is available in units of 95 to 400 H.P.

The improvements in 2-cycle engine design embodied in the CLARK "Super 2" — *which have reduced fuel consumption fully one-third*—are available in 95 h. p. Single and 190 h. p. Twin types, also in the single 200 h. p. *Double Acting* Engine and the 400 h. p. twin Double Acting Engine. Some operators find each size desirable. But the definite fuel savings of the "Super 2" design, combined with the maintenance economy of CLARK 2-cycle construction, is putting CLARK equipment in most of the new plants.

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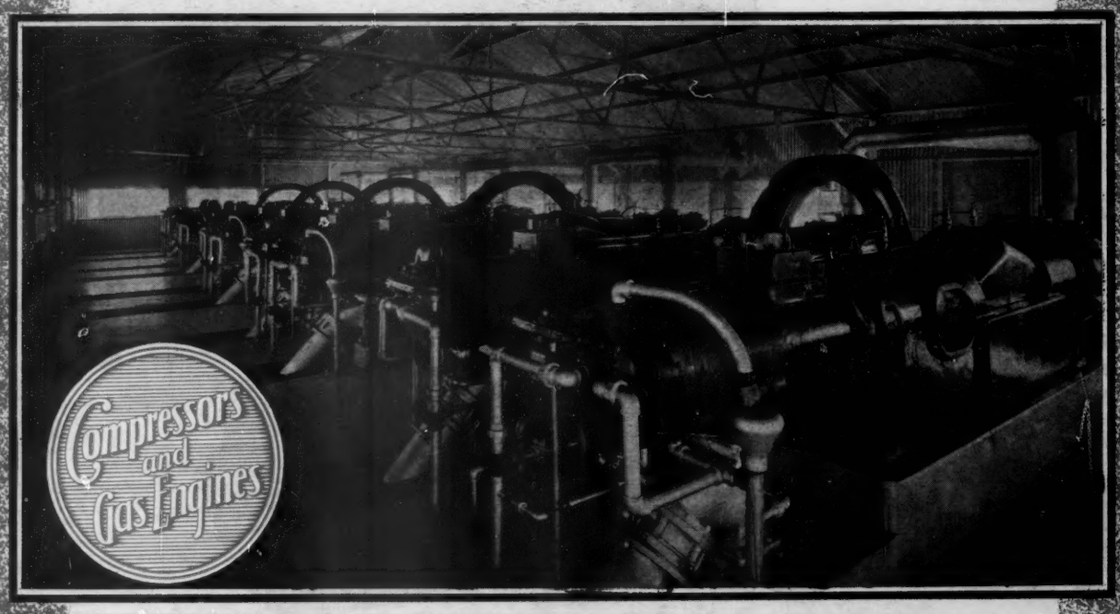

190 H. P. Clark Super 2s in a Gray County, Texas, Plant of The Shamrock Gasoline Co.

CLARK